Chapter 2 Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures

As part of the scoping and environmental analysis carried out for the project, the following environmental issues were considered but no adverse impacts were identified. As a result, there is no further discussion about these issues in this document.

Coastal Zone: There is no potential for adverse impacts to a coastal zone because the project site is approximately 50 miles inland from the coast.

National Marine Fisheries Service: This project is located outside of NMFS jurisdiction, therefore an NMFS species list is not required and no effects to NMFS species are anticipated.

Wild and Scenic Rivers: There is no potential for adverse impacts to wild and scenic rivers due to the absence of designated wild and scenic rivers in the vicinity of the project site.

Farmlands or Timberlands: There is no potential for adverse impacts to farmlands or timberlands. The project site is in an urban part of the City of Lake Elsinore and no timberlands are present. The following four assessments prepared for the project determined that there are no farmlands in the vicinity of the project site:

- *Final Community Impact Assessment* (CIA) (December 2010)
- *Supplemental Memorandum to the Final Community Impact Assessment* (January 2012)
- *Second Supplemental Memorandum to the Community Impact Assessment* (January 2015)
- *Third Supplemental Memorandum to the Final Community Impact Assessment* (February 2015)

This page intentionally left blank

Human Environment

2.1 Land Use

2.1.1 Existing and Future Land Uses

The project area, as previously illustrated in Figure 1.1, is in the City of Lake Elsinore, in Riverside County. The project area is the area studied for temporary and permanent project impacts. Existing land use patterns, development trends, and adopted goals and policies are summarized from the City of Lake Elsinore General Plan (adopted December 13, 2011). Existing land uses in the project area are described below by quadrant.

- **Northwest Quadrant (I-15/Railroad Canyon Road Interchange):** Land use designations within this quadrant include Medium Density Residential, Public Institutional, General Commercial (including areas which include the Auto Mall Overlay), and Tourist Commercial. This quadrant is located within the Lake Elsinore Hills Land Use District.[1] Existing land uses within this quadrant include shopping centers (Shoppers Square Shopping Center and Plaza Del Sol) between the I-15/Railroad Canyon Road interchange and Casino Drive and numerous fast-food restaurants, hotels, and office complexes along Casino Drive. Other existing land uses within this quadrant include a Ford car dealership located between I-15 and Auto Center Drive. Numerous multifamily and single-family residences are located north of Mill Street.
- **Northeast Quadrant (I-15/Railroad Canyon Road Interchange):** Land use designations within this quadrant include General Commercial and Specific Plan Area designations and are within the Riverview Land Use District.[2] Current land uses in this quadrant include single-family residences, neighborhood shopping centers (containing gas stations, banks, and other services for the local population), and storage compounds along Canyon Estates Drive and Summerhill Drive. Several small businesses and fast-food restaurants (e.g., In-N-Out and Kentucky Fried Chicken) are also located in this quadrant and are part of the Riverview Land Use District.[3]
- **Southwest Quadrant (I-15/Railroad Canyon Road Interchange):** This quadrant includes General Commercial, Commercial Mixed Use, Public Institutional, and Specific Plan Area land use designations and is within the Lake Elsinore Hill Land Use District.[4] Current uses in this quadrant include two neighborhood shopping centers, an animal hospital, several fast-food restaurants, and chain restaurants along Diamond Drive and Casino Drive.
- **Southeast Quadrant (I-15/Railroad Canyon Road Interchange):** This quadrant includes General Commercial, Low-Medium Residential, Open Space, and Specific Plan Area land use designations and is within the Lake Elsinore Hills Land Use District.[5] Existing land uses within this quadrant include townhomes and a regional shopping center (including big-box retail, grocery store, and fast-food restaurants) north of Grape Street.
- **Northwest Quadrant (I-15/Franklin Street Interchange):** This quadrant is also within the City of Lake Elsinore and within the Riverview Land Use District. Land use designations within this quadrant include High Density Residential and General Commercial (with the

---

1 City of Lake Elsinore Parks and Recreation Department. 2008. *Parks Facilities Map and Parks Amenities Chart*. November.
2 Ibid.
3 Ibid.
4 Ibid.
5 Ibid.

Auto Mall Overlay). There are no current uses within this quadrant. All land within this quadrant is vacant land.

- **Northeast Quadrant (I-15/Franklin Street Interchange):** Located within the City of Lake Elsinore, this quadrant is part of the Lake Elsinore Hills Land Use District. Land use designations within this quadrant include Commercial Mixed Use, Open Space, Hillside Residential, Public Institutional, and Business Professional. Existing land use within this quadrant primarily consists of vacant land; however, there is a residential subdivision of single-family homes northwest of Canyon Estates Drive.
- **Southwest Quadrant (I-15/Franklin Street Interchange):** This quadrant is part of the Riverview Land Use District. Land use designations within this quadrant include General Commercial (with Auto Mall Overlay), Public Institutional, Residential Mixed Use, Medium Density Residential, High Density Residential, and Low-Medium Residential. Existing land uses within this quadrant consist of single-family residences, multiple-family residences, a car dealership, and a school (Railroad Canyon Elementary School).
- **Southeast Quadrant (I-15/Franklin Street Interchange):** Located in the City of Lake Elsinore, this quadrant is part of the Lake Elsinore Hills Land Use District and is designated for Business Professional uses. Land use designations within this quadrant include Business Professional, Public Institutional, and Specific Plan Area. Existing land uses within this quadrant consist of single-family residences and self-storage facilities.

The City of Lake Elsinore initiated its General Plan Update in 2005 and a Notice of Preparation of an Environmental Impact Report (EIR) was distributed on or about November 15, 2005. The City held a public scoping meeting On November 20, 2005, soliciting public and agency comments. In December 2007, a draft Program EIR was circulated for public review in compliance with the *State CEQA Guidelines*. The Final Program EIR was never certified due to the need for substantive revisions to the Draft General Plan Update based on comments received during the public hearing process. In addition to revisions to the Land Use Element, the Land Use Map and the Traffic Impact Study to reflect the land use changes, further revisions to the General Plan Update were necessary to incorporate (1) any updated Housing Element sections not included as part of the original General Plan scope; and (2) provisions of a Downtown Master Plan. It should also be noted that a Climate Action Plan is being prepared as part of the update (refer to Section 2.24, Climate Change, for a discussion of the Climate Action Plan). The combined changes to the General Plan Update, including the addition of a Housing Element update, a Downtown Master Plan, and a Climate Action Plan have triggered the need to update, revise, and where necessary, expand on the analysis of the General Plan Update impacts presented in the 2007 Draft Program EIR.

The *City of Lake Elsinore General Plan Update* (December 13, 2011) Community Form Element identifies the desired or intended use of land in the City and its Sphere of Influence (SOI) and encompasses a comprehensive strategy for managing the community's future. The Lake Elsinore General Plan is the community's statement of what is in its interest and is the City's most important statement regarding its physical, economic, and cultural development over the next 20 years. The City's General Plan Update was adopted on December 13, 2011. The City's total planning area at build out (Year 2030) encompasses approximately 46,564 acres. Of this area, approximately 27,747 acres are currently within the City limits and the remainder is within the City's SOI.

Land use designations are provided to define the type, amount, and nature of development that is allowed at any given location. Developable land uses in the planning area at build out include 21,582 acres of residential uses, 286 acres of mixed residential uses, 1,258 acres of business-related uses, 631 acres of mixed commercial, 698 acres of limited industrial uses, 1,341 acres of public/institutional uses, 4,588 total acres of open space and recreation uses, and 12,712 acres of Specific Plan uses. The remaining 667 acres that are not subject to development include flood control facilities and road rights-of-way. General Plan land uses for the City of Lake Elsinore are illustrated in Figure 2.1.1.

2.1.2 Development Trends

Currently, much of the City's existing vacant land and open space areas are governed by adopted Specific Plans and slated for future development. Substantial open space areas and Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) conservation areas are located throughout the City. Based on Table 3.1-2 of the City of Lake Elsinore's General Plan EIR, land use designations within the City limits include 9,631 acres of residential uses, 1,501 acres of business-related uses, 354 acres of mixed use, 3,787 acres of public/ quasi-public uses, and 4,325 total acres of open space uses (parks or permanent open spaces). The remaining acreage within the City that is not subject to development includes flood control facilities and road rights-of-way. Table 2.1.A and Figure 2.1.1 provide a summary and illustrate proposed projects within the project vicinity.

2.1.3 Consistency with State, Regional, and Local Plans

2.1.3.1 Regional Plans

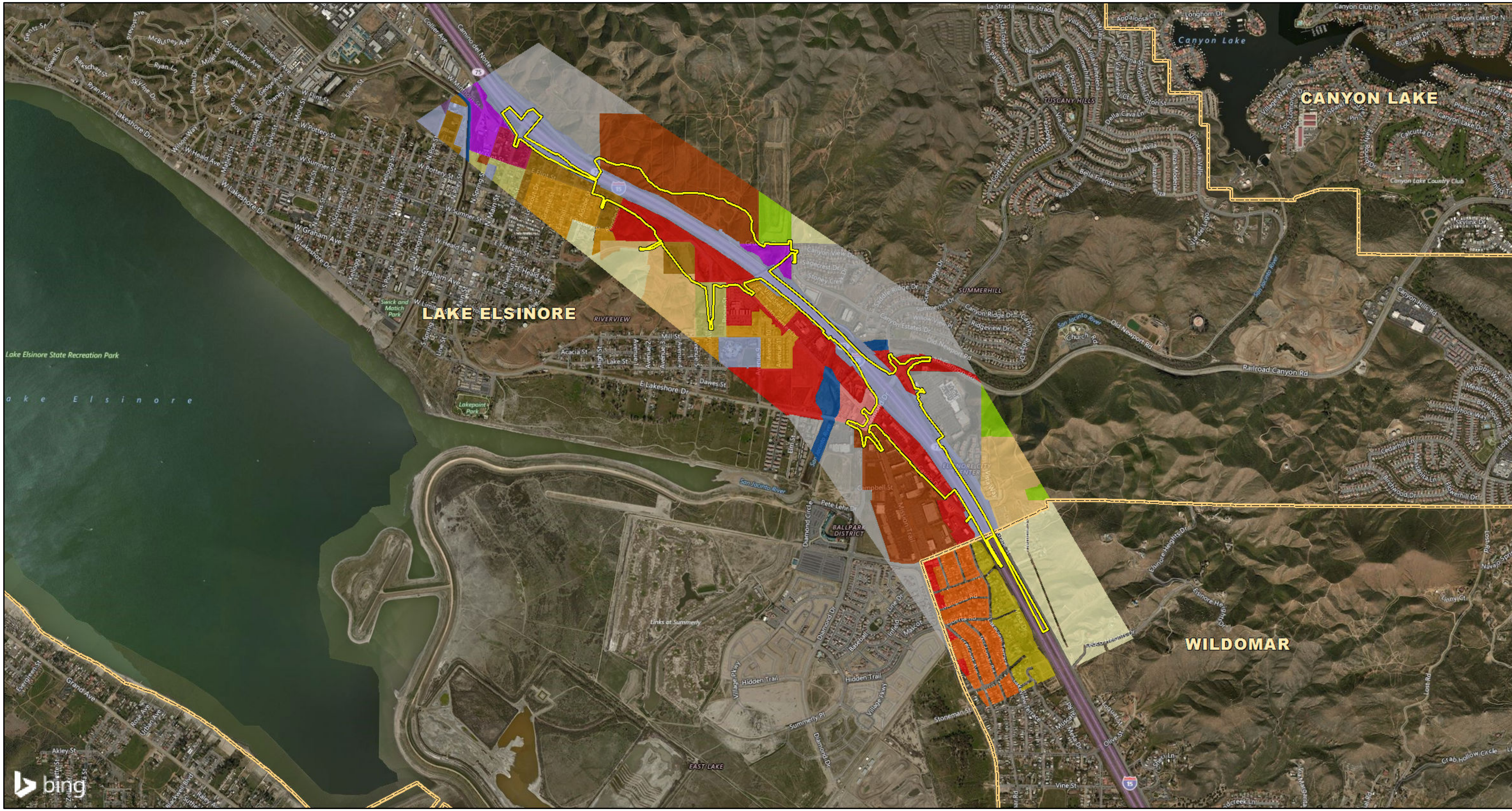
REGIONAL TRANSPORTATION PLAN (RTP)/SUSTAINABLE COMMUNITIES STRATEGY (SCS)

The 2016 RTP/SCS was adopted by the Southern California Association of Governments (SCAG) on April 7, 2016, and found to conform by the Federal Highway Administration/Federal Transit Administration (FHWA/FTA) on June 1, 2016. Amendment No. 1 to the 2016 RTP/SCS was subsequently adopted by SCAG on April 6, 2017, and Amendment No. 2 to the RTP/SCS was adopted by SCAG on July 6, 2017. The SCAG 2016 RTP/SCS establishes a transportation vision for Los Angeles, Orange, San Bernardino, Riverside, Ventura, and Imperial Counties. The RTP/SCS is a comprehensive 24-year transportation plan that represents a vision for a better transportation system integrated with the best possible growth pattern for the region through 2040. The RTP/SCS identifies major challenges as well as potential opportunities associated with growth, transportation finances, the future of airports in the region, and impending transportation system deficiencies that could result from growth projections for the region. The SCS is a required element of the RTP that integrates land use and transportation strategies that will achieve Air Resources Board (ARB) emissions reduction targets. SCAG updates the RTP/SCS every 4 years.

FEDERAL TRANSPORTATION IMPROVEMENT PROGRAM (FTIP)

The Federal Transportation Improvement Program (FTIP) is a capital listing of all transportation projects proposed over a 6-year period for the SCAG region. The FTIP is prepared to implement projects and programs listed in the RTP and is developed in compliance with State and federal requirements. The locally prioritized lists of projects are forwarded to SCAG for review. SCAG develops the FTIP based on consistency with the current RTP, inter-county connectivity, financial constraints, and conformity satisfaction. The FTA and the FHWA approved the 2017 FTIP on September 1, 2016.

This page intentionally left blank



N

0 1,000 2,000

FEET

- Project Footprint
- City Boundaries

Lake Elsinore Adopted General Plan

- F - Floodway
- BP - Business Professional
- LI - Limited Industrial
- GC - General Commercial
- TC - Tourist Commercial
- GWC - Gateway Commercial
- CM - Commercial Mixed Use
- RM - Residential Mixed Use
- HR - Hillside Residential
- LMR - Low-Medium Residential
- MDR - Medium Density Residential
- HDR - High Density Residential
- OS - Open Space
- P/I - Public/Institutional
- SP - Specific Plan

Wildomar General Plan Land Use

- CR - Commercial Retail
- EDR - Estate Residential
- MHDR - Medium High Density Residential
- VHDR - Very High Density Residential

FIGURE 2.1.1

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Cities of Lake Elsinore and Wildomar General Plan Land Uses

SOURCE: Bing Aerial, 2015; City of Lake Elsinore, 2011; City of Wildomar, 2014.

I:\SAE1401\Reports\IS_EA\fig2-1-1_GP_Land_Use.mxd (10/4/2016)

This page intentionally left blank

Table 2.1.A: Summary of Proposed Projects Within Project Vicinity

Name	Jurisdiction	Proposed Uses	Status
Industrial Design Review No. 2008-01	City of Lake Elsinore	Located on Collier Avenue immediately north of Riverside Drive. The project is an industrial business park consisting of five concrete tilt-up buildings ranging in size from 5,000 square feet to 18,100 square feet for a total building square footage of 67,100 square feet for the site.	Approved at Lake Elsinore City Council Meeting, May 11, 2010.
Assessor's Parcel No. 363-670-005 31587 Canyon Estates	City of Lake Elsinore	Two-story 10,000-square foot medical office building and related improvements within the Neighborhood Commercial (C-1/SP) zoning district of the Canyon Creek Summerhill Specific Plan. The 0.78-net acre project site is located on the west side of Canyon Estates Drive and north of Summerhill Drive.	Approved by City Council on November 5, 2007.
Spyglass Ranch	City of Lake Elsinore	The 259-acre Spyglass Ranch Specific Plan would result in the development of a maximum of 1,035 dwelling units consisting of eight estate dwelling units, 515 single family dwelling units, 222 courtyard homes, and 290 multi-family residential units. The Specific Plan also includes a 6.5-acre park site, 95.9 acres of open space, and 11.1 acres devoted to Major Circulation. The project would be developed in conformance with the previously approved Spyglass Ranch Specific Plan. The project site is located on the east side of Camino Del Norte at its intersection with Main Street.	On March 17, 2015, three Amendments to the Spyglass Ranch Specific Plan related to demolition of the existing Delaney Ranch Complex and deletion of references to the subdivision of the property into six parcels were approved by the City of Lake Elsinore Planning Commission.
Beazer Homes, McMillin Homes, and Richmond American Homes	City of Lake Elsinore	The project consists of residential dwelling units located west of Mission Trail between Diamond Drive and Corydon Street. Beazer Homes consists of 65 single-family residential units. McMillin Homes consists of 64 single-family residential units. Richmond American Homes consists of 74 single-family residential units.	Approved by City Council, Beazer Homes on August 23, 2011, McMillin Homes on July 8, 2015, and Richmond American Homes on March 22, 2011.
Pardee Homes	City of Lake Elsinore	The project consists of 456 detached condos south of Railroad Canyon Road,	Approved by City Council on July 21, 2015.
Summerly	City of Lake Elsinore	142 units located west of Mission Trail between Diamond Drive and Corydon Street.	Ongoing, under construction.
Lakeshore Town Center[1]	City of Lake Elsinore	Proposed development of 101,230-square-foot hotel, 33,900-square-foot retail, 178,443-square-foot multifamily residential, plus pier on 25 acres of Lake Elsinore's northeastern shore on the west side of Lakeshore Drive south of Spring Street and east of the Main Street-Lakeshore Drive intersection.	Preliminary review is under way, to be followed by environmental analysis and Planning Commission review.
Southshore II (Tentative Tract Map No. 36567)	City of Lake Elsinore	The 71.7-acre project site consists of 147 single-family detached residential units, 19.0 acres of natural open space, 3.5 acres of public park, and an on-site detention basin. The project site is located northeast of I-15 at the Main Street interchange.	Approved

Table 2.1.A: Summary of Proposed Projects Within Project Vicinity

Name	Jurisdiction	Proposed Uses	Status
Crestview at Rosetta Hills	City of Lake Elsinore	The project includes 65 single-family residential units.	Approved and completed.
Walmart	City of Lake Elsinore	The proposed project would develop a commercial retail shopping center that would include a 154,487-square-foot Walmart store, three outer lots for other retail uses, and parking facilities on the southwest corner of Central Avenue (SR-74) and Cambern Avenue, which is regionally accessed by I-15 and Central Avenue.	Environmental review in progress.
Fisherman' s Wharf	City of Lake Elsinore	The project consists of 12,748 square feet, located on Lakeshore Drive between Riverside Drive and Chaney Street.	Pending
Tentative Tract Map 33370	City of Lake Elsinore	Proposed development of 90 condominium units on approximately 9 acres of Lake Elsinore's Riverview District on the west side of Interstate 15, south of Avenue 6, north of Bancroft Way, and east of Channing Way.	Pending Final Tentative Tract Map approval by City Council.

Source: City of Lake Elsinore.
[1] The Press Enterprise, 2015. Website: http://www.pe.com/articles/city-7711793-lake-project.html (accessed July 23, 2015).
I-15 = Interstate 15
SR-74 = State Route 74

2.1.3.2 Local Plans

CITY OF LAKE ELSINORE GENERAL PLAN

The City of Lake Elsinore recently underwent an update of its General Plan. The General Plan update was approved on December 13, 2011. The I-15/Railroad Canyon Road Interchange Project is consistent with the General Plan goals for the City of Lake Elsinore regarding relevant land use, circulation/ transportation, conservation, open space, noise, and safety elements. The applicable General Plan goals and policies have been included as part of Table 2.1.B.

WESTERN RIVERSIDE COUNTY MULTIPLE SPECIES HABITAT CONSERVATION PLAN

The MSHCP was adopted on June 17, 2003. The MSHCP is a comprehensive, multi-jurisdictional Habitat Conservation Plan (HCP) focusing on the long-term conservation of species and their habitats in Western Riverside County. The MSHCP serves as an HCP pursuant to Section 10(a)(1)(B) of the Federal Endangered Species Act (FESA) as well as the Natural Communities Conservation Plan (NCCP) under the State of California. The United States Fish and Wildlife Service (USWFS) issued a Biological Opinion for the MSHCP on June 22, 2004. The California Department of Fish and Wildlife (CDFW) also issued the NCCP Approval and Take Authorization for the MSHCP.

Table 2.1.B: Consistency With State, Regional, and Local Plans and Programs

<table>
<tr><th>Policy</th><th>Alternative 1
(No Build Alternative)</th><th>Alternative 2</th><th>Alternative 3</th><th>Alternative 4</th></tr>
<tr><td colspan="5">Regional Transportation Plan (RTP)</td></tr>
<tr><td>The 2016 RTP/SCS adopted by SCAG in April 2016 contains a set of existing socioeconomic projections used as the basis for the SCAG's transportation planning efforts. They include projections of population, housing, and employment at the regional, county, sub-regional, jurisdictional, census tract, and transportation analysis zone levels. The RTP/SCS includes policies and regulations set forth to ensure development within the SCAG regional area is within planned and forecasted socioeconomic projections. Goals established within the RTP/SCS include the following:
• Align the plan investments and policies with improving regional economic development and competitiveness.
• Maximize mobility and accessibility for all people and goods in the region.
• Ensure travel safety and reliability for all people and goods in the region.
• Preserve and ensure a sustainable regional transportation system.
• Maximize the productivity of our transportation system.
• Protect the environment and health of our residents by improving air quality and encouraging active transportation (non-motorized transportation, such as bicycling and walking).
• Actively encourage and create incentives for energy efficiency, where possible.
• Encourage land use and growth patterns that facilitate transit and non-motorized transportation.
• Maximize the security of the regional transportation system through improved system monitoring, rapid recovery planning, and coordination with other security agencies.</td><td>Not Consistent. Under the No Build Alternative, no changes to the existing roadways or freeway infrastructure would occur in the project area. This alternative would not maximize mobility and accessibility of the regional transportation system as existing freeway deficiencies would remain in current and future year conditions.</td><td colspan="3">Consistent. Alternatives 2, 3, and 4 would result in the construction of improvements identified in the 2016 RTP/SCS. Construction of these programmed improvements would be consistent with SCAG's RTP Major Initiative pertaining to improving Highway and Arterial Capacity, specifically focusing on achieving maximum productivity by adding capacity, primarily by closing gaps in the system and improving access.</td></tr>
<tr><td colspan="5">Federal Transportation Improvement Program (FTIP)</td></tr>
<tr><td>The FTIP is a capital listing of all transportation projects proposed over a 6-year period for the SCAG region. The projects include highway improvements, transit, rail and bus facilities, high occupancy vehicle lanes, signal synchronization, intersection improvements, and freeway ramps, etc.

The FTIP is prepared to implement projects and programs listed in the RTP and is developed in compliance with state and federal requirements.</td><td>Not Consistent. Under the No Build Alternative, no changes to the existing roadways or freeway infrastructure would occur in the project area. This alternative would not construct improvements programmed in the FTIP that would minimize congestion in the area.</td><td colspan="3">Consistent. Alternatives 2, 3, and 4 would result in the construction of improvements identified in the FTIP. Construction of these programmed improvements would minimize congestion in the area (which would meet the RTP's overarching transportation goals) and would fulfill improvements identified in the FTIP.</td></tr>
</table>

Table 2.1.B: Consistency With State, Regional, and Local Plans and Programs

Policy	Alternative 1 (No Build Alternative)	Alternative 2	Alternative 3	Alternative 4
City of Lake Elsinore General Plan (2011)				
Goals established within the City of Lake Elsinore General Plan include the following: **Land Use Goal 1:** Create a diverse and integrated balance of residential, commercial, industrial, recreational, public and open space land uses. **Growth Management Goal 7:** Maintain orderly, efficient patterns of growth that enhance the quality of life for the residents of Lake Elsinore. **Circulation Goal 6:** Optimize the efficiency and safety of the transportation system within the City of Lake Elsinore. **Circulation Policy 6.1:** The interconnection and coordination of traffic signals shall be achieved through two processes, namely the requirements in the conditions of approval on development projects and/or through the implementation of Capital Improvement Program projects. **Conservation Goal 1:** Identify and conserve important biological habitats where feasible while balancing the economic growth and private property right interests of the City, its residents, and landowners. **Conservation Goal 2:** Protect sensitive plant and wildlife species residing or occurring within the City. **Conservation Goal 10:** Encourage the preservation, protection, and restoration of historical and cultural resources. **Public Safety/Welfare Goal 1:** Continue to coordinate with the Air Quality Management District and the City's Building Department to reduce the amount of fugitive dust that is emitted into the atmosphere from unpaved areas, parking lots, and construction sites.	**Not Consistent.** Under the No Build Alternative, no changes to the existing roadways or freeway infrastructure would occur in the project area. This alternative would not provide an efficient transportation network for traffic between the State highway and areas in Lake Elsinore that would minimize conflicts with automobile traffic and incompatibility with other land uses.	**Consistent.** The General Plan (2011) contains goals and policies that aim to minimize traffic congestion and provide adequate transportation facilities in a safe and efficient manner. The goals and policies identified in the City's General Plan resemble those of the RTP/SCS that address mobility, traffic safety, environmental concerns, and land use consistency as the major traffic study factors to identify existing traffic conditions and to assess the future effects on area traffic patterns/flow. Since either alternative would be consistent with the General Plan and, since the General Plan shall be consistent with the RTP/SCS, it is reasonable to infer that either alternative is consistent with policies set forth in the City's General Plan.		

Table 2.1.B: Consistency With State, Regional, and Local Plans and Programs

Policy	Alternative 1 (No Build Alternative)	Alternative 2	Alternative 3	Alternative 4
Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP)				
The MSHCP is a comprehensive, multi-jurisdictional Habitat Conservation Plan (HCP) focusing on the long-term conservation of species and their habitats in western Riverside County including: • Riparian/Riverine/Vernal Pool/Fairy Shrimp Habitat • Riparian/Riverine Species • Burrowing Owl • Least Bell's Vireo • Migratory and Other Protected Birds • Bats The MSHCP also provides guidelines for the following: • Wildlife Connectivity • MSHCP Reserve Assembly Requirements • Urban/Wildlands Interface Guidelines • Drainage • Toxics • Lighting • Noise • Barriers • Invasive Species	**Not applicable.** Although the project area is within the MSHCP, no changes to the physical setting would occur under the No Build Alternative as there would be no improvements to the existing roadway or freeway network.	**Consistent.** Alternative 2, Alternative 3, and Alternative 4 would be consistent as indicated below. In response to a request from Caltrans dated June 30, 2017, the USFWS and CDFW issued their concurrence on July, **date**, 2017, that the project is consistent with the MSHCP (see correspondence in Appendix K of this IS/EA). **Riparian/Riverine/Vernal Pool/Fairy Shrimp Habitat.** The project would permanently affect 0.211 acre and temporarily affect 0.020 acre of potential jurisdictional non-wetland waters of the U.S. No wetland waters of the U.S. would be affected. In addition, 0.280 acre of CDFW regulated streambed would be permanently affected by the project and 0.044 acre of CDFW regulated streambed/riparian habitat would be temporarily affected by the project. To mitigate for impacts to streambed/riparian habitat and non-wetland waters, one or a combination of the following would compensate for impacts: on-site restoration, on-site habitat enhancement, off-site participation in an in-lieu fee program, and/or purchase of credits from a mitigation bank for habitat creation. Mitigation ratios for impacts to waters typically vary from 1:1 to 5:1. Negotiation with Army Corps of Engineers (USACE) and the California Department of Fish and Wildlife (CDFW) will take place to establish final mitigation ratios. **Riparian/Riverine Species.** Several depressions within the project BSA were evaluated in 2010 as potential vernal pools. The results of the 2010 fairy shrimp habitat assessment found that the depressions within the BSA did not have the vegetative, hydrologic, or soil characteristics associated with vernal pools and would not support federally listed fairy shrimp species. However, during the March 2017 consultation with the RCA and the Wildlife Agencies, the USFWS raised concerns,		

Table 2.1.B: Consistency With State, Regional, and Local Plans and Programs

Policy	Alternative 1 (No Build Alternative)	Alternative 2	Alternative 3	Alternative 4
		based on new information, related to potential impacts to threatened/endangered fairy shrimp species. The USFWS stated that there was a new recent record of San Diego fairy shrimp (*Branchinecta sandiegonensis*) in Riverside County, and that the depressions on site may support this species. Based on this new information, avoidance and minimization measures were developed. Potential effects to listed fairy shrimp would be avoided and minimized by the measures outlined in Section 2.21.4. The planned project would not impact LBV habitat through direct permanent removal and/or indirect permanent degradation of existing riparian/riverine vegetation. However, potential temporary indirect effects may occur. Potential temporary, indirect effects to LBV would be avoided and minimized by the conservation measures outlined in Section 2.21.4. **Burrowing Owl.** The focused owl survey determined that the burrowing owl is absent from the project site at this time. Per the MSHCP, a pre-construction survey for this species would be required 30 days prior to project development (i.e., ground-disturbing activities). **Migratory Birds and Other Protected Birds.** To avoid impacts to migratory birds, vegetation clearing is to take place outside of the active breeding season, (typically set as February 15 through September 1) in order to comply with the MSHCP and Migratory Bird Treaty Act (MBTA). If vegetation removal must occur during this avoidance period, then a nest survey by a qualified biologist is required. The nest survey shall be conducted for three consecutive days and no more than three days prior to clearing. If an active nest is observed, then the project would be postponed until the breeding season is finished.		

Table 2.1.B: Consistency With State, Regional, and Local Plans and Programs

Policy	Alternative 1 (No Build Alternative)	Alternative 2	Alternative 3	Alternative 4
		Bats. The project site contains potentially suitable roosting habitat for bats within existing structures (e.g., bridge structures, culverts, and crevices, etc.). Potential effects to bat species would be avoided and minimized by the measures outlined in Section 2.20.4. **Wildlife Connectivity.** The project would not further limit wildlife connectivity/movement. The northern portion of the MSHCP Proposed Extension of Existing Core 3 provides for movement of species along the lower San Jacinto River to Proposed Linkage 8. The project would not directly impact riparian habitat within the San Jacinto River or other regulated riparian resources in the BSA. Temporary impacts to localized wildlife movement are not expected during construction. **MSHCP Reserve Assembly Requirements.** As discussed in the Results and Impacts section above, because the project is either not within and/or not impacting target Criteria Cell conservation areas, and through implementation of Conservation Measures identified above, the project would be consistent with Reserve Assembly Requirements. **Guidelines Pertaining to the Urban/Wildlands Interface.** Temporary indirect impacts include construction-related impacts such as dust, potential fuel spills from construction equipment, possible night lighting during construction, and activities of equipment or personnel outside designated construction areas as well as operational impacts such as on adjacent habitats caused by storm water runoff, traffic, and litter. In addition, construction may indirectly impact riparian/riverine habitats permanently through enhancing the germination and proliferation of nonnative invasive plant species. Invasive plant species are those that out-compete native plants; they are of particular concern. Indirect impacts are difficult to quantify since they result from		

Table 2.1.B: Consistency With State, Regional, and Local Plans and Programs

<table>
<tr><th>Policy</th><th>Alternative 1
(No Build Alternative)</th><th>Alternative 2</th><th>Alternative 3</th><th>Alternative 4</th></tr>
<tr><td></td><td></td><td colspan="3">normal activities and can change from day to day. These indirect impacts may affect conserved habitats within the project area. The MSHCP Guidelines Pertaining to the Urban/Wildlands Interface are intended to address indirect effects associated with development in proximity to conservation areas.

The project will comply with the guidelines as identified and discussed below.

Drainage. The project will incorporate measures for reducing potential stormwater impacts to conservation areas and other downstream areas per the project's Storm Water Data Report. These include design pollution prevention BMPs, permanent treatment BMPs, and temporary construction BMPs. In addition, a Storm Water Pollution Prevention Plan will be prepared for this project.

Toxics. As stated above, the project will incorporate measures to reduce and prevent toxic discharge into conservation areas and other adjacent habitats through incorporation of pollution prevention BMPs.

Lighting. The project will install shielded night lighting, directed away from conservation areas to protect species and to ensure ambient lighting in the conservation areas is not increased. Any new lighting fixtures that would be installed within 300 feet of the San Jacinto River shall be wildlife-friendly.

Noise. The project is not anticipated to have adverse effects related to land use noise standards. The BSA does not lie within the target conservation areas of Criteria Cells 4548, 4745, and 4838. Riparian habitat within and along the San Jacinto River in Criteria Cell Nos. 4646, 4647, and 4743 is considered to be the target conservation areas within these cells. The riparian habitat within and along the San Jacinto River within these Criteria Cells would not be directly impacted by the project. Therefore the existing I-15</td></tr>
</table>

Table 2.1.B: Consistency With State, Regional, and Local Plans and Programs

Policy	Alternative 1 (No Build Alternative)	Alternative 2	Alternative 3	Alternative 4
		noise levels would not change as a result of the project. **Barriers.** The project is not anticipated to have adverse effects related to unauthorized access to conservation areas. In addition and as stated above, the project would not directly affect target conservation areas within the MSHCP Criteria Cells. **Invasive Species.** The project would not utilize invasive, nonnative plant species listed in Table 6-2 of Guidelines Pertaining to the Urban/Wildlands Interface of the MSHCP, Volume 1, Section 6.1.4, in landscaping.		

BMP = Biological Management Plan
BSA = biological study area
CDFW = California Department of Fish and Wildlife
RCA = Regional Conservation Authority
RTP/SCS = Regional Transportation Plan/Sustainable Communities Strategy
USFWS = United States Fish and Wildlife Service

2.1.4 Parks and Recreational Facilities[1]

There are no parks or recreational facilities within the project limits. Parks and recreation resources within 0.5 mile of the project area are illustrated in previously referenced Figure 1.1. As identified in Figure 2.1.2, there are three public parks: Summerhill Park (5 acres), Linear Park (0.5 acre), and Yarborough Park (3 acres) within 0.5 mile of the project area. Summerhill Park is a City park located on the corner of Canyon Estates Drive and Summerhill Drive.

A large multi-use sports field dominates this site. Additional amenities include a tot play area with creative play equipment and restroom facilities. Linear Park is also a City park and is located on Canyon Estates Drive between High Crest Drive and Canyon Crest Drive.

This pocket-park provides seating areas and small turf areas at both the west and east sides of the park (connected via paved walking path) in a passive use environment. Yarborough Park is located on the corner of Flint Street and Poe Street and includes picnic facilities, restroom facilities, shaded areas, a tot lot, and open turf areas. All three parks are in the immediate vicinity of the project but would not be affected by any Build Alternative.

In addition to these parks, Lake Elsinore Diamond Stadium is located at the corner of Diamond Drive and Malaga Road, approximately 0.3 mile southwest of the project limits. The facility is a full-service baseball stadium that can accommodate up to 8,000 people for baseball games, and has a seating capacity of up to 14,000 people for concerts, race cars, motocross races, and boxing and martial arts competitions. The stadium is separated from I-15 by multiple frontage roads and buildings. None of the planned improvements or construction activities would result in use of the stadium. During construction of the project, no street closures would occur near the stadium; therefore, access to the stadium would not be affected. The stadium would not be affected by either of the Build Alternatives.

2.1.5 Environmental Consequences

Table 2.1.B provides a summary of the project's consistency with State, Regional, and Local Plans and Programs for each of the Build Alternatives and the No Build Alternative.

2.1.5.1 Temporary Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

The No Build Alternative would not result in any temporary impacts related to land use as the No Build Alternative does not include any construction activities.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

Any potential impacts associated with changes in land use within the project area under this alternative are considered to be permanent impacts and are addressed below. Therefore, Alternative 2 would not result in any temporary impacts related to land use.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

Any potential impacts associated with changes in land use within the project area under Alternative 3 would be considered permanent and are addressed below. Therefore, Alternative 3 would not result in any temporary impacts related to land use.

---

[1] City of Lake Elsinore. 2008. Parks and Recreation Department. *Parks Facilities Map and Parks Amenities Chart.* November.

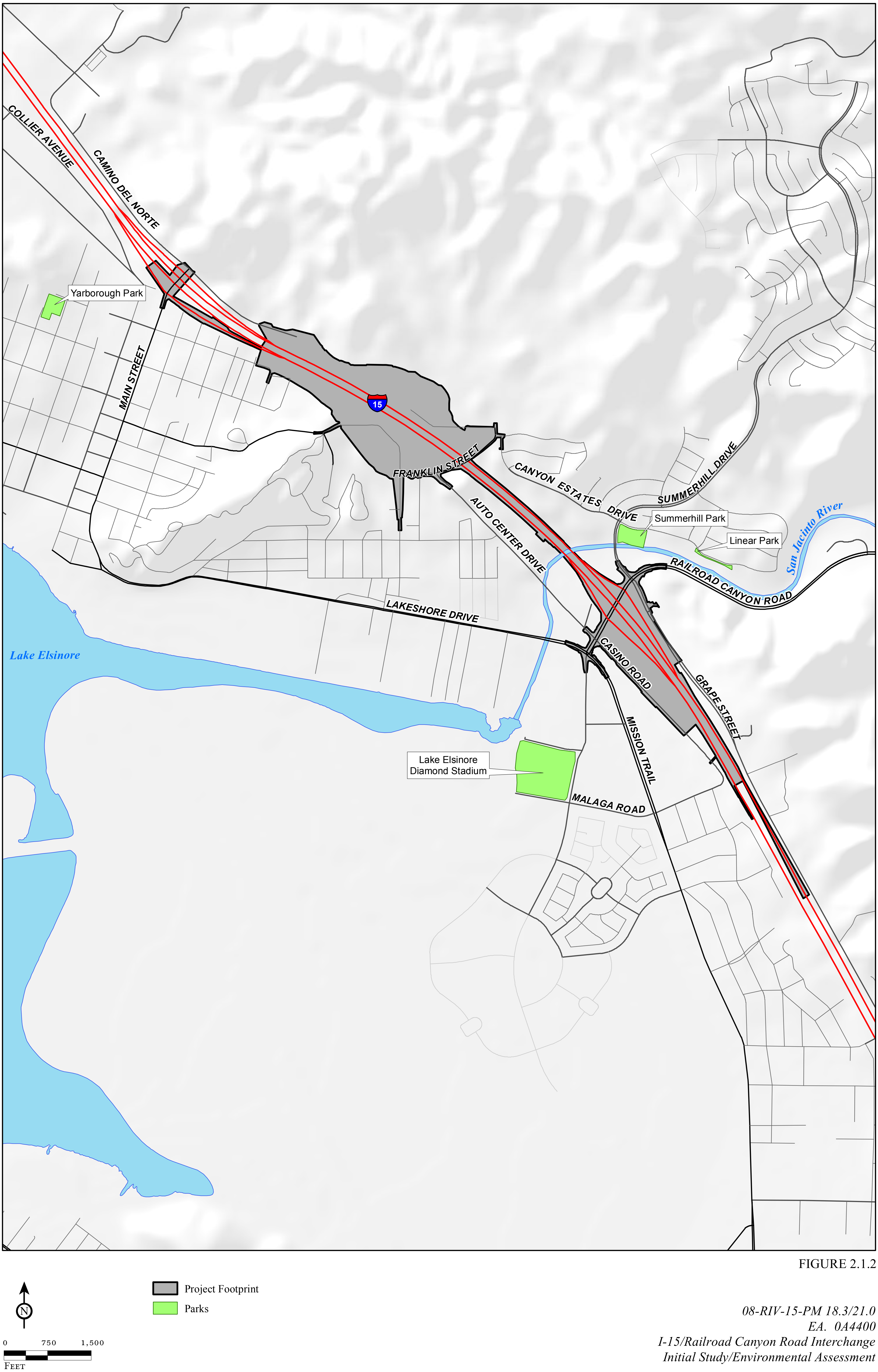


FIGURE 2.1.2

SOURCE: Riverside County, 2015

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Recreational Facilities

I:\SAE1401\Reports\IS_EA\fig2-1-2_RecFacil.mxd (10/4/2016)

This page intentionally left blank

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

Any potential impacts associated with changes in land use within the project area under this alternative are considered to be permanent impacts and are addressed below. Therefore, Alternative 4 would not result in any temporary impacts related to land use.

2.1.5.2 Permanent Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

The No Build Alternative would not result in any permanent impacts related to land use as the No Build Alternative does not include any construction activities.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

As identified in Table 2.1.B, Alternative 2 would be consistent with the identified local and regional land use plans. As previously identified, two public parks (Linear Park and Summerhill Park) are near the project limits but would not be affected by Alternative 2. Although these parks would be considered 4(f) resources, Alternative 2 would not require the use of a Section 4(f) park or recreational facility (Appendix B – Resources Relative to the Requirements of Section 4(f)).

For improvements made to the existing I-15/Railroad Canyon Road interchange, substantial direct and indirect impacts to land use would not occur under Alternative 2. Modifications made to this interchange would not change the nature of land uses in the area as the area surrounding this existing interchange is built out and heavily urbanized. Section 2.2.2 of this document provides additional analysis on growth-related effects associated with planned improvements to the I-15/Railroad Canyon Road interchange.

For improvements associated with the new I-15/Franklin Street interchange, minor direct and indirect impacts to land use would occur under Alternative 2. Construction of improvements associated with this new interchange would increase accessibility to and from the surrounding area. Current surrounding land uses consist of low-density residential and vacant property. While the new interchange would contribute to the eventual change in land use (low-density residential and vacant properties to more urban uses), these changes have already been accounted for in the City's General Plan. Section 2.2.2 of this document provides additional analysis on growth-related effects associated with construction of the I-15/Franklin Street interchange. No permanent impacts associated with land use or Section 4(f) resources would occur with implementation of Alternative 2.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

As identified in Table 2.1.B, Alternative 3 would also be consistent with the identified local and regional land use plans. Similar to Alternative 2, two public parks (Linear Park and Summerhill Park) are near the project limits for Alternative 3. However, these parks would not be affected by Alternative 3. Although these parks would be considered 4(f) resources, Alternative 3 would not require the use of a Section 4(f) park or recreational facility (Appendix B – Resources Relative to the Requirements of Section 4(f)).

For improvements made to the existing I-15/Railroad Canyon Road interchange, substantial direct and indirect impacts to land use would not occur under Alternative 3. Modifications made to this interchange would not change the nature of land uses in the area as the area surrounding this existing interchange is built out and heavily urbanized. Section 2.2.2 of this document provides additional analysis on growth-related effects associated with proposed improvements to the I-15/Railroad Canyon Road interchange.

As identified for Alternative 2, improvements associated with the new I-15/Franklin Street interchange, minor direct and indirect impacts to land use would occur under Alternative 3. Construction of improvements associated with this new interchange would increase accessibility to and from the surrounding area. Current surrounding land uses consist of low-density residential and vacant property. While the new interchange would contribute to the eventual change in land use (low-density residential and vacant properties to more urban uses), these changes have already been accounted for in the City's General Plan. Section 2.2.2 of this document provides additional analysis on growth-related effects associated with construction of the I-15/Franklin Street interchange. No permanent impacts associated with land use or Section 4(f) resources would occur with implementation of Alternative 3.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

As identified in Table 2.1.B, Alternative 4 would also be consistent with the identified local and regional land use plans. Similar to Alternative 2, two public parks (Linear Park and Summerhill Park) are near the project limits for Alternative 4. However, these parks would not be affected by Alternative 4. Although these parks would be considered 4(f) resources, Alternative 4 would not require the use of a Section 4(f) park or recreational facility (Appendix B, Resources Relative to the Requirements of Section 4(f)).

For improvements made to the existing I-15/Railroad Canyon Road interchange, substantial direct and indirect impacts to land use would not occur under Alternative 4. Modifications made to this interchange would not change the nature of land uses in the area as the area surrounding this existing interchange is built out and heavily urbanized. Section 2.2.2 of this document provides additional analysis on growth-related effects associated with proposed improvements to the I-15/Railroad Canyon Road interchange.

As identified for Alternative 2, improvements associated with the new I-15/Franklin Street interchange, minor direct and indirect impacts to land use would occur under Alternative 4. Construction of improvements associated with this new interchange would increase accessibility to and from the surrounding area. Current surrounding land uses consist of low-density residential and vacant property. While the new interchange would contribute to the eventual change in land use (low-density residential and vacant properties to more urban uses), these changes have already been accounted for in the City's General Plan. Section 2.2.2 of this document provides additional analysis on growth-related effects associated with construction of the I-15/Franklin Street interchange. No permanent impacts associated with land use or Section 4(f) resources would occur with implementation of Alternative 4.

CEQA DISCUSSION

Would the project:

II. a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

No Impact. Farmland maps are compiled by the California Department of Conservation, Farmland Mapping and Monitoring Program (FMMP), pursuant to the provisions of Section 65570 of the California Government Code. These maps utilize data from the United States Department of Conservation United States Department of Agriculture (USDA) Natural Resource Conservation Service (NRCS) soil survey and current land use information using eight mapping categories and represent an inventory of agricultural resources within Riverside County. The maps depict currently urbanized lands and a qualitative sequence of agricultural designations. Maps and statistics use a process that integrates aerial photo interpretation, field mapping, a computerized mapping system, and public review. No portion of the project site is designated as Prime, Unique, or Statewide Important Farmland by the FMMP.[1] As no conversion of such farmland would occur, no impact related to this issue would result from implementation of the project. No mitigation is required.

II. b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

No Impact. Williamson Act[2] contracts restrict land development of contract lands. The contracts typically limit land use in contract lands to agriculture, recreation, and open space, unless otherwise stated in the contract. The project site is not located within an area covered by a Williamson Act contract; therefore, no cancellation or non-renewal action would occur. Neither the site nor surrounding properties are currently utilized or planned on being utilized for agricultural uses. Implementation of the project would not result in the conversion of Williamson Act contract land or conversion of agriculturally zoned land to a non-agricultural use. No impact related to these issues would occur; therefore, no mitigation is required.

II. c) Conflict with existing zoning for, or causing rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?

No Impact. The project site is not located within an area zoned for forest land, timberland, or an area zoned Timberland Production; therefore, no conflict would occur. Neither the site nor surrounding properties are currently utilized or planned on being utilized for forest or timberland uses. Implementation of the project would not result in the conversion of forest land or conversion of land zoned for forestry to a non-forest use. No impact related to these issues would occur; therefore, no mitigation is required.

II. d) Result in the loss of forest land or conversion of forest land to non-forest use?

No Impact. As previously identified, the project site is not located within an area zoned for forest land, timberland, or an area zoned Timberland Production. Implementation of the project would not result in the conversion of forest land or conversion of land zoned for forestry to a non-forest use. No impact related to these issues would occur; therefore, no mitigation is required.

II. e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?

No Impact. As no agricultural activity occurs on or adjacent to the project site, and because the project area has been previously planned for non-agricultural uses, implementation of the project would not cause changes in the existing environment that would result in the conversion

---

1 California Department of Conservation, Farmland Mapping and Monitoring Program, 2012.

2 The Williamson Act is a procedure authorized under State law to preserve agricultural lands as well as open space. Property owners entering into a Williamson Act contract receive a reduction in property taxes in return for agreeing to protect the land's open space or agricultural values.

of farmland to a non-agricultural use. As a result, no impact related to this issue would occur, and no mitigation is required.

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

No Impact. The project is consistent with the City's General Plan Circulation Element and does not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project; therefore, no impacts would occur. No mitigation is required.

XIV. a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

Schools?

No Impact. The project does not include the development or occupation of residential units, nor are the improvements to existing roadways and freeway interchanges anticipated to increase additional permanent employment in the project area. In the absence of any increase in local student enrollment or increased usage of school facilities, the project would not result in a direct or indirect impact in student enrollment at schools within the Lake Elsinore Unified School District (LEUSD). Therefore, no impacts would occur, and no mitigation is required.

Parks?

No Impact. The project would not result in the development of residential units; therefore, no increase in population would result from the proposed action. In the absence of any increased population, no increased demand on existing park facilities in the City would occur. Therefore, no impacts would result from implementation of the project. No mitigation is required.

Other public facilities?

No Impact. Since the project consists of infrastructure improvements to existing roadways and interchanges, implementation of the project would not result in an increase in the local population. Without an increase in the local population, there would be no increased demand on library, government, or community support services associated with the project. Therefore, no impacts would occur. No mitigation is required.

XV. a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities, such that substantial physical deterioration of the facility would occur or be accelerated?

No Impact. No residential component or other use that would cause a direct or indirect increase in population is planned; therefore, no direct or indirect demand on neighborhood/regional parks or recreational facilities would occur. Therefore, implementation of the project would not result in a substantial physical deterioration of a recreational facility. No impacts would occur; therefore, no mitigation is required.

XV. b) Does the project include recreational facilities or require the construction or expansion of recreational facilities, which might have an adverse physical effect on the environment?

No Impact. The project consists of improvements to existing roadways and freeway interchanges. As previously stated, no residential component or other use that would cause a direct or indirect increase in population is planned. Therefore, no development or expansion of recreational facilities is required. No impact would occur, and no mitigation is required.

XI. a) Would the project result in the loss of availability of a known mineral resource that would be a value to the region and the residents of the state?

No Impact. Based on the Mineral Resource Zones (MRZ) established by California Department of Conservation, the project site is designated as MRZ-3.[1] The MRZ-3 classification is assigned when the significance of mineral deposits cannot be determined from the available data. The project site is currently developed with an existing freeway facility. Implementation of the proposed project would result in the continual operation of the freeway facility. The project site is not designated as an area with known significant mineral resource value. Implementation of the project would not result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State. Therefore, no impacts would occur. No mitigation is required.

XI. b) Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

No Impact. The project site is not located in an area designated for mineral resource recovery or production on the City's General Plan. No impact related to this issue would result from implementation of the project. No mitigation is required.

2.1.6 Avoidance, Minimization, and/or Mitigation Measures

Based on the analysis contained in Section 2.1, the project is not anticipated to have impacts associated with land use. Therefore, no avoidance, minimization, and/or mitigation measures are required.

[1] City of Lake Elsinore. 2011. General Plan Final Recirculated Program Environmental Impact Report, Figure 3.12-1, Mineral Resource Zones, December 2011.

This page intentionally left blank

2.2 Growth

2.2.1 Regulatory Setting

The Council on Environmental Quality (CEQ) regulations, which established the steps necessary to comply with the National Environmental Policy Act (NEPA) of 1969, require evaluation of the potential environmental effects of all proposed federal activities and programs. This provision includes a requirement to examine indirect consequences, which may occur in areas beyond the immediate influence of a proposed action and at some time in the future. The CEQ regulations (40 Code of Federal Regulations [CFR] 1508.8) refer to these consequences as indirect impacts. Indirect impacts may include changes in land use, economic vitality, and population density, which are all elements of growth.

The California Environmental Quality Act (CEQA) also requires the analysis of a project's potential to induce growth. The CEQA guidelines (Section 15126.2[d]) require that environmental documents "…discuss the ways in which the proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment…"

2.2.2 Background

This section is based on information from the following documents prepared for the project:

- *Community Impact Assessment* (December 2010)
- *Supplemental Memorandum to the Final Community Impact Assessment* (January 2012)
- *Second Supplemental Memorandum to the Final Community Impact Assessment* (January 2015)
- *Third Supplemental Memorandum to the Final Community Impact Assessment* (February 2015)

Demographic information from the 2012–2035 SCAG RTP/SCS Growth Forecasts was also utilized. As illustrated in Figure 2.2.1, the project area for growth is within the City of Lake Elsinore, with a focus on Census Tract 427.15, Census Tract 430.01, Census Tract 430.06, and Census Tract 464.04.

All of the study area census tracts are within the City of Lake Elsinore. Census tracts are small, relatively permanent statistical subdivisions of a county. Census tracts are delineated by a local committee of census data users for the purpose of presenting data. Census tract boundaries normally follow visible features, but may follow governmental unit boundaries and other non-visible features in some instances; they always nest within counties. Designed to be relatively homogeneous units with respect to population characteristics, economic status, and living conditions, census tracts average about 4,000 inhabitants.[1]

[1] United States Census Bureau. 2010. *Definition of a Census Tract, Question and Answer Center*, website: https://ask.census.gov/app/answers/detail/a_id/245, November 15, 2010.

This page intentionally left blank

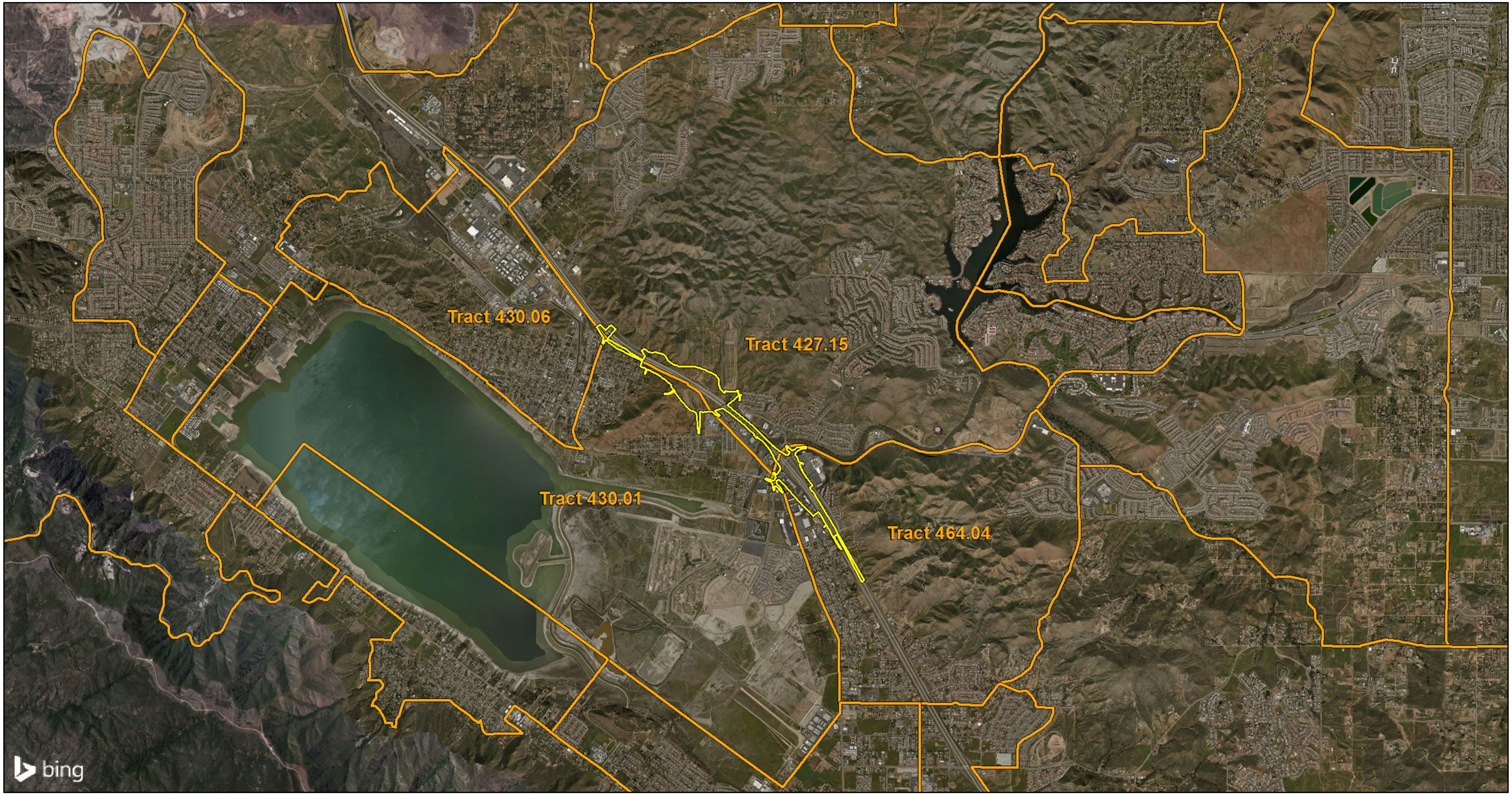


FIGURE 2.2.1

N

0 2,000 4,000

FEET

Project Footprint

Census Tract

SOURCE: Bing Aerial, 2015.

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Study Area Census Tracts

I:\SAE1401\Reports\IS_EA\fig2-2-1_Census.mxd (10/4/2016)

This page intentionally left blank

2.2.3 First-cut Screening

Caltrans' *Guidance for Preparers of Growth-Related, Indirect Impact Analyses* (May 2006) provides methods for evaluating a proposed highway transportation project in terms of whether the proposed project may result in growth-related impacts. The *Guidance for Preparers of Growth-Related, Indirect Impact Analyses* provides methods for determining the growth-related effects of transportation improvement projects. This guidance document provides a first-cut screening approach to growth impact analysis that identifies the need for and the extent of growth-related impact analysis based on the responses to various questions related to a project's change in accessibility, its potential to influence growth, and the potential for project-related growth to impact resources of concern.

The potential growth-related impacts of the project were considered in the context of the first-cut screening analysis approach to assess the likely growth-potential effect of the project, and whether further analysis is necessary, based on consideration of the following:

- *How, if at all, does the proposed project potentially change accessibility?*

I-15/Railroad Canyon Road Interchange. At the I-15/Railroad Canyon Road interchange, the project would widen and lengthen the on-ramps and off-ramps, replace existing ramps with a new ramp to enhance circulation, and improve the Grape Street/Railroad Canyon intersection immediately east of the existing interchange. The project requires reconfiguration of the existing I-15/Railroad Canyon Road interchange to improve operation of the existing interchange and local circulation, enhance safety, alleviate existing deficiencies, and accommodate projected future traffic volumes based on existing and planned development in the area. In addition, the project is within an urban area. Due to the nature of the built-out land use patterns and the absence of resources of concern within this area, the likelihood of this highway project causing growth-related impacts is low.[1]

I-15/Franklin Street Interchange. The project would also result in the construction of a new interchange approximately 1,160 feet north of the existing I-15/Franklin Street overcrossing as well as construct, realign, widen, and extend Auto Center Drive and Camino Del Norte-Canyon Estates Drive. The surrounding area in the vicinity of the new interchange consists of low-density residential uses and vacant property that could be considered a suburban area. Typically, a suburban area may have a greater potential for growth-related impact concerns due to the greater presence of open space/vacant land and resources of concern.

The project would occur in the northeast area of Lake Elsinore, an area planned for extensive commercial and residential expansion growth through the City's General Plan Build Out Year. This new interchange would improve accessibility to and from the surrounding area for existing, approved, and future planned development in all directions from the project area. Therefore, this project would result in a change in accessibility that has been planned for and anticipated by future developments, and has already identified in the 2012–2035 SCAG RTP and the 2017 FTIP. Any future development within the vicinity of the project is anticipated, regardless of whether or not the project is implemented.

Although the project would increase accessibility between homes and jobs, and would accommodate the planned rate of growth in the area, the project is not expected to substantially influence the overall amount or type of local or regional growth that has been identified by the City. Growth in Lake Elsinore is expected to follow the trend of Riverside County's population

[1] California Department of Transportation. 2006. Guidance for Preparers of Growth-Related, Indirect Impact Analyses, May.

growth, which is fueled by the migration of people from other parts of the State, which is not expected to be largely dependent on the construction of the I-15/Franklin Street interchange. Therefore, the rate of growth is not expected to be substantially increased with the implementation of the build alternatives.

- *How, if at all, do the project type, project location, and growth-pressure potentially influence growth?*

I-15/Railroad Canyon Road Interchange. Current and projected development patterns depend on the supply of jobs in Riverside and Orange Counties, and the abundance of affordable housing in outlying counties. This pattern of development is likely to continue with or without the project. The project would not include sufficient capacity to substantially improve commuting times through the project area. Examples of projects likely to have excess capacity include extensions or expansions of public infrastructure systems beyond what is needed to serve project-specific demand. This project would not exceed project-specific demand, and the purpose of this project is to relieve current traffic congestion at this existing freeway interchange.

According to the City of Lake Elsinore's General Plan, Railroad Canyon Road is a major arterial that supports more than 40,000 vehicles per day. Traffic studies conducted in 2014 reveal that level of service (LOS) (measurements of density, delay, and travel time) at on- and off-ramp segments of Railroad Canyon Road are expected to increasingly deteriorate by 2035 (see Section 2.7, Traffic and Transportation/Pedestrian and Bicycle Facilities). This major arterial currently allows consumers to reach Lake Elsinore, Lake Elsinore Diamond Stadium, Walmart, and various shopping centers located along Casino Drive. These commercial areas are key locations for economic stimulus; hence, this arterial is an important access pathway to retail and recreation locations. However, the improvements identified under the three Build Alternatives for the I-15/Railroad Canyon Road interchange are unlikely to attract additional residential or commercial development or new population into the Lake Elsinore planning area as the area surrounding the existing I-15/Railroad Canyon Road interchange is already built out with urban uses.

Improvements to the existing I-15/Railroad Canyon Road interchange would reduce congestion along this major arterial to these commercial areas while accommodating future growth and planned development that would be present whether the project is constructed or not. Therefore, given the built out nature of the area surrounding the existing interchange and the nature of the interchange improvements, the project is not expected to substantially influence the overall amount or type of regional growth.

I-15/Franklin Street Interchange. Pressure for growth is typically a result of a combination of factors including economic, market, and land use demands and conditions. New transportation facilities in areas without those facilities can influence the amount and location of growth in an area, in combination with other pressures such as economic and market conditions.

For the component associated with the construction of the I-15/Franklin Street interchange, the project's impact on accessibility is more than what was identified for the I-15/Railroad Canyon Road interchange because of the new connection provided between I-15 and the surrounding area. Due to the lack of development currently existing within the area surrounding the planned interchange site and because there is no access to the freeway in this area currently, it is "reasonably foreseeable" that growth-related effects would occur. However, the construction of this component is unlikely to attract additional residential or commercial development or new population into the Lake Elsinore planning area beyond what is already projected by the City and region. The City of Lake Elsinore has several goals and policies that provide a long-term strategy to manage growth and development patterns, including zoning and subdivision regulations and development impact fees.

This component of the project is unlikely to encourage the development of more acreage of employment generating land uses in the area. The local and regional growth patterns and projections shown below would presumably be realized with or without either of the Build Alternatives, in recognition of broad, social/economic policies and trends that are anticipated to occur throughout this part of Riverside County.

Table 2.2.A provides the 2008 population and projected 2010, 2015, and 2035 populations for Riverside County, the City of Lake Elsinore, and the project area census tracts.

Table 2.2.A: Population, Household, and Employment Estimates

City/County/Census Tract	2008	2010	2015	2035	Percentage Increase from 2010 to 2035
Population					
Census Tract 427.15	6,763[1]	7,795	9,970	10,764	58.9
Census Tract 430.01	5,564[1]	6,120	11,861	22,246	299.8
Census Tract 430.06	4,966[1]	5,276	6,744	8,759	76.4
Census Tract 464.04	513[1]	518	546	586	14.2
City of Lake Elsinore	50,200	51,138	70,500	93,800	86.9
County of Riverside	2,128,000	2,242,745	2,592,000	3,324,000	56.2
Households					
Census Tract 427.15	1,549[1]	2,328	2,958	3,189	105.9
Census Tract 430.01	1,525[1]	1,972	3,894	7,474	390.1
Census Tract 430.06	1,307[1]	1,532	1,987	2,657	103.3
Census Tract 464.04	272[1]	278	288	299	9.9
City of Lake Elsinore	14,600	15,239	21,000	28,700	96.6
County of Riverside	679,000	720,531	834,000	1,092,000	60.8
Employment					
Census Tract 427.15	1,317[1]	1,575	2,053	2,799	112.5
Census Tract 430.01	2,249[1]	2,540	3,075	3,909	73.8
Census Tract 430.06	3,208[1]	3,456	3,907	4,604	43.5
Census Tract 464.04	959[1]	1,130	1,445	1,933	101.6
City of Lake Elsinore	10,300	12,152	15,000	20,100	95.1
County of Riverside	664,000	784,998	939,000	1,243,000	87.2

Source: Southern California Association of Governments. 2012. Adopted 2012 SCAG RTP Growth Forecast and Adopted 2008 SCAG RTP Growth Forecast, by Census Tract. Website: http://gisdata.scag.ca.gov/Pages/SocioEconomicLibrary.aspx?keyword=Forecasting (accessed January 5, 2015).

1 Data at the census tract level were not available for year 2008; therefore, population, housing, and employment estimates for year 2008 were interpolated from available data from years 2005 and 2010.

By 2035, the population in Lake Elsinore is anticipated to total 93,800 residents. The number of households within the City is also anticipated to increase at a similar rate. By 2035, the City is projected to have 28,700 total households. Currently, jobs within the City of Lake Elsinore have grown at a much slower rate than population or households. As identified in Table 2.2.A, by 2035, there are anticipated to be 20,100 jobs in Lake Elsinore.

The potential for growth-inducing effects would be the highest on undeveloped and unplanned land because these areas generally have limited existing transportation infrastructure. The project would enhance operations along I-15 that currently experience a constrained level of freeway and local road access. Growth will emerge in some locations from land uses that change in response to market demands. The majority of the land adjacent to the planned I-15/ Franklin Street interchange is currently undeveloped. Based on the City's General Plan, these lands are designated for commercial, business, and high/medium density residential uses. The construction of the I-15/Franklin Street interchange is not anticipated to result in the rezoning or reclassification of lands surrounding the future I-15/Franklin Street interchange area in the community general plan from these existing land use designations to a more intensive land use.

The project is not out of conformance with the growth-related policies of the Lake Elsinore General Plan. The overarching goal identified in the City's General Plan calls for an orderly, efficient pattern of growth that enhances the quality of life for the residents of Lake Elsinore. The Build Alternatives do not propose land use that is inconsistent with this goal or other related policies. Moreover, the fact that the project is called for in the FTIP and for which each City provides input, suggests that growth policies will effectively manage any growth created by the Build Alternative. The project is unlikely to lead to the intensification of development densities or schedules for development. Previously identified Table 2.1.A provides a status of developments within the proximity of the project. These developments would presumably exist under their current schedules with or without the project.

The construction of the I-15/Franklin Street interchange that would occur under all of the Build Alternatives would conform with the City's General Plan and does not conflict with the City of Lake Elsinore's managed growth policies. In addition, the Build Alternatives are unlikely to alter the historic and projected growth patterns within the City of Lake Elsinore and the County of Riverside and do not encourage growth on undeveloped and unplanned land. The planned transportation improvements of this project accommodate existing traffic in the area. Based on the analysis provided above, this component of the project would have no substantial potential for stimulating the location, rate, timing or amount of growth in or adjacent to the project study area. Development of this interchange and associated population growth is not expected to cause substantial externalities to the community of Lake Elsinore.

- *Is project-related growth reasonably foreseeable as defined in NEPA?*

I-15/Railroad Canyon Road Interchange. As previously stated, there is an existing need to improve operations and congestion at the existing I-15/Railroad Canyon Road interchange. While these improvements would accommodate existing, approved, and planned growth in the area, these improvements are not reliant on the timing of growth that could occur within the area. In addition, the project does not substantially increase the capacity of the transportation system and does not provide new transportation facilities in areas without those facilities. Therefore, it is not expected to influence the amount, timing, or location of growth in the City of Lake Elsinore. Because the planned improvements to I-15/Railroad Canyon Road interchange are not expected to influence the amount, timing, or location of growth in the area, no reasonably foreseeable project-related growth is anticipated as a result of the project.

I-15/Franklin Street Interchange. For the component associated with the construction of the I-15/Franklin Street interchange, the project's impact on accessibility is more than what was identified for the I-15/Railroad Canyon Road interchange because of the new connection provided between I-15 and the surrounding area. Due to the lack of development currently existing within the area surrounding the planned interchange site and because there is no access to the freeway in this area currently, it is "reasonably foreseeable" that growth-related effects would occur. The project would likely accelerate the rate of growth in the area by making it more accessible, but would not result in new unplanned growth since the surrounding area is already designated for future land uses in accordance with the City of Lake Elsinore General Plan, based on the analysis provided previously.

- *If there is project-related growth, how, if at all, will that impact resources of concern?*

I-15/Railroad Canyon Road Interchange. For improvements to the existing I-15/Railroad Canyon Road interchange, the project's impact on accessibility is limited to improving the operational performance of an existing interchange. It is not "reasonably foreseeable" that project-related growth will occur and, overall, this project component will have very little influence on future growth. As previously stated, the project is within an urban area. Due to the nature of the built-out land use patterns and the absence of resources of concern within this urban area, the likelihood of these improvements impacting resources of concern is low. No further analysis with respect to growth is required for this component of the project.

I-15/Franklin Street Interchange. As previously identified, it is "reasonably foreseeable" that growth-related effects would occur with the construction of the I-15/Franklin Street interchange. The project would likely accelerate the rate of growth in the area by making it more accessible, but would not result in new unplanned growth since the surrounding area is already designated for future land uses in accordance with the City of Lake Elsinore General Plan.

For resources of concern, project-specific effects have been identified in this environmental document. Although there is a possibility that planned growth-related effects associated with the I-15/Franklin Street interchange could occur, existing regulations and standards to resources of concern would still apply for other projects in the area.

Resources of concern include cultural, visual, and biological resources. For cultural resources, future projects may result in the potential disturbance of both known and as yet unidentified historic properties, archaeological sites, and paleontological resources. For biological resources, future projects may result in habitat fragmentation and division of larger tracts of habitat into smaller noncontiguous areas as a result of artificial structures such as roads, buildings, and other infrastructure. For visual resources, future projects may result in the conversion of portions of a semi-rural area into a more urban landscape and changes to the viewer exposure to the area. Each resource of concern is discussed in detail in this environmental document with identification of the laws and regulations that would pertain to the development of this project. In addition, a comprehensive discussion of cumulative effects to these resources of concern has been provided in Section 2.23. Discussion in Section 2.23 takes into account the nature of cumulative projects in relation to this project. Based on the analysis provided above and within each of the chapters of this environmental document, it was determined that this component of the project would not result in substantial unplanned project-related growth, and no further analysis is required.

CEQA DISCUSSION

Would the project:

XIII. a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

Less Than Significant Impact. The project does not contain a residential, industrial, or commercial component. Therefore, no increase in population would result from the proposed action. The growth in the City and the County is expected to occur with or without the project. The project improves the function of the interchange and local intersections in the City of Lake Elsinore. The improvements would accommodate the growth planned for the City of Lake Elsinore and, therefore, would not be expected to cause new unplanned growth in the study area. Therefore, impacts associated with this issue would be less than significant. No mitigation measures are required.

2.2.4 Avoidance, Minimization, and/or Mitigation Measures

Based on the analysis contained in Section 2.2, the project is not anticipated to have adverse impacts associated with project-related growth. Therefore, no avoidance, minimization, or mitigation measures are required.

Community Impacts

2.3 Community Character and Cohesion

2.3.1 Regulatory Setting

The National Environmental Policy Act of 1969 as amended (NEPA), established that the federal government use all practicable means to ensure that all Americans have safe, healthful, productive, and aesthetically and culturally pleasing surroundings (42 United States Code [USC] 4331[b][2]). The Federal Highway Administration in its implementation of NEPA (23 USC 109[h]) directs that final decisions regarding projects are to be made in the best overall public interest. This requires taking into account adverse environmental impacts, such as destruction or disruption of human-made resources, community cohesion, and the availability of public facilities and services.

Under the California Environmental Quality Act (CEQA), an economic or social change by itself is not to be considered a significant effect on the environment. However, if a social or economic change is related to a physical change, then social or economic change may be considered in determining whether the physical change is significant. Since this project would result in physical change to the environment, it is appropriate to consider changes to community character and cohesion in assessing the significance of the project's effects.

2.3.2 Affected Environment

This section is based on the information from the following documents prepared for the project:

- *Community Impact Assessment* (December 2010)
- *Supplemental Memorandum to the Final Community Impact Assessment* (January 2012)
- *Second Supplemental Memorandum to the Final Community Impact Assessment* (January 2015)
- *Third Supplemental Memorandum to the Final Community Impact Assessment* (February 2015)

Community cohesion is the degree to which residents have a sense of belonging to their neighborhood, and their levels of commitment to their community, or a strong attachment to neighbors, groups, and institutions, usually as a result of continued association over time. Elements of community cohesion can be found in demographic data used to profile communities from the 2000 and 2010 United States Census. Some specific indicators of community cohesion are as follows:

- **Race and Ethnicity:** Racial and ethnic homogeneity is associated with a higher degree of community cohesion.
- **Age:** Elderly and stay-at-home parents tend to be more active in their community. They have time to become involved.
- **Household Size:** Households of two or more people tend to correlate with a higher degree of community cohesion.
- **Housing Tenure:** Households that have been part of a community for a longer period of time tend to correlate with a higher degree of community cohesion.

- **Type of Housing Occupancy:** Communities with a high percentage of owner-occupied residences are typically more cohesive because their population tends to be less mobile. Because they have a financial stake in their communities, homeowners often take a greater interest in what is happening in their communities than renters do. This means they often have a stronger sense of belonging to their communities**.**
- **Transit-Dependent Population:** Residents who tend to walk or use public transportation for travel tend to correlate with a higher degree of community cohesion.

2.3.2.1 Race and Ethnicity

Table 2.3.A provides the racial and ethnic composition for the City of Lake Elsinore, Riverside County, and the project area census tracts. Previously referenced Figure 2.2.1 provides the location of the project area census tracts. As identified in Table 2.3.A, the County of Riverside is predominantly White, followed by Hispanic and Other. The composition of the City of Lake Elsinore is similarly predominantly White (60 percent), followed by Hispanic (48 percent) and Other (22 percent). When compared to the City and the County, Census Tract 430.01 and Census Tract 464.04 have the highest percentage of American Indian (1.4 percent and 1.5 percent, respectively). Census Tract 430.06 has the highest percentage of people who claimed to be of "Other" ethnicity (29.3 percent). Census Tract 430.06 has the highest percentage of Hispanics (63 percent) while Census Tract 464.04 has the highest percentages of Whites (63.6 percent). Census Tract 427.15 has the highest percentage of Asians (10.6 percent) and the lowest percentage of Other (13.5 percent).

Table 2.3.A: 2010 Racial and Ethnic Composition

Jurisdiction	Percentage[1]						
	White	Black	American Indian/Native Alaskan	Asian	Hawaiian/ Pacific Islanders	Other	Hispanic[2]
Census Tract 427.15	62.5%	6.6%	0.6%	10.6%	0.3%	13.5%	35.8%
Census Tract 430.01	61.1%	3.8%	1.4%	1.5%	0.4%	26.4%	60.1%
Census Tract 430.06	57.3%	5.1%	1.3%	2.3%	0.3%	29.3%	63.0%
Census Tract 464.04	63.6%	4.7%	1.5%	4.6%	0.2%	20.3%	42.2%
City of Lake Elsinore	60.0%	5.3%	0.9%	5.8%	0.3%	21.6%	48.4%
County of Riverside	61.0%	6.4%	1.1%	6.0%	0.3%	20.5%	45.5%

Source: United States Census Bureau. Census 2010. *Table QT-P4 – Race, Combinations of Two Races, and Non-Hispanic or Latino: 2010*, *Table QT-P10 – Hispanic or Latino by Type: 2010.*

1 Percentages do not add to 100 percent because the White, Black, American Indian and Alaska Native, Hawaiian and Pacific Islander, and Other categories include persons identified with one race only; the Hispanic category overlaps with other categories. Individuals may report more than one race.

2 The Census Bureau recognizes Hispanic heritage as an ethnic group rather than as a separate group. If the percent Hispanic is added to the other racial groups, the total may exceed 100 percent.

2.3.2.2 Household Size

As identified in Table 2.3.B, the populations of the City of Lake Elsinore, the County of Riverside, and the State all increased between 2000 and 2010. The number of persons per household for Census tracts in the study area ranged from 2.82 to 3.22 persons per household, with the City of Lake Elsinore having the greatest number of persons per household at 3.48.

Table 2.3.B: Population and Household Size

Demographic Characteristics	Census Tract 427.15	Census Tract 430.01	Census Tract 430.06	Census Tract 464.04	City of Lake Elsinore	County of Riverside	California
Total Population (2010)	12,805	5,593	4,703	5,590	51,821	2,189,641	37,253,956
Population Change (2000–2010)	(+) 168%	(+) 44%	(+) 16%	(+) 123%	(+) 79%	(+) 42%	(+) 10%
Persons per Household	2.82	3.00	3.22	2.95	3.48	3.14	2.90

Source: United States Census Bureau. Census 2010 and 2000. *Table P1 – Total Population, Table P017001 – Households: Average Household Size, Table DP1 – Profile of General Population and Housing Characteristics*: 2010.

2.3.2.3 Housing Tenure

Table 2.3.C provides data on how long homeowners have been residing in their units for the study area census tracts, the City, and the County of Riverside.

Table 2.3.C: Housing Tenure

Jurisdiction/Area	Tenure	Tenure by Year Structure Built (%)					
		1969 or earlier	1970–1979	1980–1989	1990–1999	2000–2009	2010 or Later
Census Tract 427.15	Owner	1.6%	5.1%	14.4%	24.4%	54.2%	0%
	Renter	0%	0%	8.3%	11.0%	80.7%	0%
Census Tract 430.01	Owner	12.8%	37.3%	19.0%	14.5%	16.3%	0%
	Renter	31.7%	20.7%	12.9%	3.9%%	30.8%	0%
Census Tract 430.06	Owner	42.8%	25.8%	21.2%	10.2%	0%	0%
	Renter	46.5%	15.7%	16.3%	1.5%	20.1%	0%
Census Tract 464.04	Owner	14.2%	2.9%	11.1%	7.0%	60.0%	0%
	Renter	24.1%	7.5%	19.3%	3.1%	46.1%	0%
City of Lake Elsinore	Owner	6.9%	8.2%	19.1%	20.4%	44.7%	0.7%
	Renter	13.2%	14.0%	25.7%	13.3%	33.5%	0.3%
County of Riverside	Owner	17.3%	13.8%	21.7%	17.0%	29.8%	0.4%
	Renter	22.8%	17.2%	21.7%	14.7%	23.2%	0.4%

Source: United States Census Bureau. Census 2012. *Table B25036: Tenure By Year Structure Built, 2008–2012* American Community Survey 5-Year Estimates.

As identified in Table 2.3.C, approximately 1.0 percent of occupants in the City of Lake Elsinore moved into their housing units in 2010 or later, and of the Census tracts within the study area, 0 percent of occupants moved into their housing units in 2010 or later. The City of Lake Elsinore has a higher proportion of residents that moved into their housing units between 2000 and 2009 than the County of Riverside overall. Census Tract 430.06 has a high percentage of residents who moved into their housing units in 1969 or earlier, at 42.8 percent for owners and 46.5 percent for renters.

2.3.2.4 Housing Occupancy Type

Table 2.3.D provides data on the percentage of renter and owner-occupied residences for the study area census tracts, the City, and the County of Riverside.

Table 2.3.D: Housing Profile

Jurisdiction/Area	Total Housing Units		Type of Occupancy[1]	
	Occupied	Vacant	Owner	Renter
Census Tract 427.15	88.8% (3,803)	11.2% (482)	71.2%	28.8%
Census Tract 430.01	89.5% (1,670)	10.5% (195)	44.9%	55.1%
Census Tract 430.06	88.0% (1,285)	12.0% (176)	44.2%	55.8%
Census Tract 464.04	89.9% (1,701)	10.1% (191)	69.8%	30.2%
City of Lake Elsinore	91.0% (14,788)	9.0% (1,465)	66.0%	34.0%
County of Riverside	85.7% (686,260)	14.3% (114,447)	67.4%	32.6%

Source: United States Census Bureau. Census 2010. *Table H3 – Occupancy Status: Housing Units, Table H4 – Tenure – Occupied Housing Units, Table DP1– Profile of General Population and Housing Characteristics: 2010*.

1 Percentages do not add up to 100 percent because not all respondents identified whether they owned or rented.

2 Housing Affordability Index (HAI) = (Median Family Income ÷ Qualifying Income) × 100; Qualifying Income used for Housing Affordability Index for City and Census Tracts was an average of all four quarters of 2010. *California Association of Realtors First-time Buyer Housing Affordability Index California and Counties 2000 to Present. Website:* http://www.car.org/3550/xls/econxls/CA_FTB_HAI_Q12000toQ32013.xls (accessed February 19, 2014).

3 United States Census Bureau, 2012. *Table B25077 – Median Value (Dollars): Owner-Occupied Housing Units,* 2008–2012 American Community Survey 5-Year Estimates.

4 United States Census Bureau, 2012. *Table B25064 – Median Gross Rent (Dollars)*, 2008 - 2012 American Community Survey 5-Year Estimates.

As identified in Table 2.3.D, Housing Profile, Census Tracts 427.15 and 464.04 demonstrate high rates of owner-occupancy similar to the rates exhibited by Lake Elsinore and Riverside County.

2.3.2.5 Transit-Dependent Population

The Federal Transit Administration defines transit-dependent persons as those (1) without private transportation, (2) elderly (over age 65), (3) youths (under age 18), and (4) persons below poverty or median income levels defined by the U.S. Census Bureau. Southern California Association of Governments (SCAG) projects that the percentage of senior citizens in Southern California will continue to rise over the next two decades, with approximately one in six people expected to be over age 64 in 2030. Table 2.3.E provides the age distribution in the project census tracts, the City of Lake Elsinore, and the County of Riverside.

Table 2.3.E: Age Distribution

Jurisdiction/Area	Median Age	Percentage of Population			
		< 18	18–34	35–64	> 64
Census Tract 427.15	31.7	30.8%	24.0%	37.9%	7.3%
Census Tract 430.01	29.9	28.4%	29.4%	34.8%	7.4%
Census Tract 430.06	29.2	31.4%	27.6%	35.1%	6.2%
Census Tract 464.04	31.1	32.2%	23.3%	37.5%	7.1%
City of Lake Elsinore	29.8	32.8%	25.1%	36.4%	5.7%
County of Riverside	33.7	28.3%	23.3%	36.5%	11.8%

Source: United States Census Bureau. 2010. *Table P13 – Median Age by Sex: Total Population, Table P12 – Sex by Age: Total Population.*

As identified in Table 2.3.E, the median age for the County of Riverside residents in 2010 was 33.7 years. Individuals under 18 years of age comprised 28 percent of the County population in 2010. Senior citizens (age 65 and over) accounted for only 12 percent of the total population in the County in 2010. The median age in the City of Lake Elsinore was 29.8 years in 2010. Of the City's residents, approximately 33 percent were below age 18 and 6 percent were over age 64. The County of Riverside has a higher median age of 33.7 years and a lower percentage of residents below age 18 (28 percent) but a higher percentage of people over age 64 (12 percent) when compared to the City.

When compared to the County, all study area census tracts have a higher percentage of residents under age 18. For residents greater than age 64, all study area census tracts have a lower percentage of residents in this age group compared to the County's average of 12 percent. Census Tract 430.06 (6 percent) is similar to the City's average of 6 percent.

In addition to identifying the age distribution, additional analysis pertaining to the percentage of the population that would be considered transit-dependent has been conducted for the project. This type of analysis changes the focus from the reasons why individuals may not drive (age, income, mobility) to identifying where there are limited vehicles available for individuals to use. Areas that have the largest disparity between auto drivers and autos available are more likely to be transit-dependent than areas that have nearly a one to one ratio between auto drivers and autos available. For those areas that do have a large disparity between drivers and autos available, there may be multiple reasons why this disparity exists. It could be due to age, income, mobility, or a combination of factors. A project alternative would cause an adverse effect if it would displace a disproportionately high percentage of transit-dependent persons. Table 2.3.F provides the results of these transit-dependent inputs.

As identified in Table 2.3.F, the percentage of the population that is transit-dependent is higher in Census Tract 430.01 (29.7 percent) and Census Tract 430.06 (23.2 percent) than the levels identified for the City of Lake Elsinore (17.7 percent) and the County of Riverside (18.3 percent). Census Tract 464.04 (16.5 percent) has a similar percentage of transit-dependent population as that identified for the City and the County. Census Tract 427.15 (16.2 percent) has a lower percentage of the population that would be considered transit-dependent.

Table 2.3.F: Transit Dependent Population (16 Years and Older Within a Household)

Jurisdiction/Area	Population (Age 16 and Over)	Persons in Group Quarters	Household Drivers[1]	Autos Available	Transit-Dependent Population (%)[2]
Census Tract 427.15	9,509	7	9,502	7,962	16.2%
Census Tract 430.01	4,257	304	3,953	2,690	29.7%
Census Tract 430.06	3,484	119	3,365	2,555	23.2%
Census Tract 464.04	4,109	8	4,101	3,422	16.5%
City of Lake Elsinore	37,636	432	37,204	30,444	17.7%
Riverside County	1,682,544	35,829	1,646,715	1,339,425	18.3%

Source: United States Census Bureau. 2010. *Table P12 – Sex by Age: Total Population, Table P43 – Group Quarters Population by Sex by Age by Group Quarters Type: Population in Group Quarters.*
Table B25046: Aggregate Number of Vehicles Available by Tenure, *2008 – 2012* American Community Survey 5-Year Estimates, United States Census Bureau, 2012. Adapted from *Calculating/Analyzing Transit Dependent Populations Using 2010 Census Data and GIS*, Todd Alan Steiss, Parsons Brinckerhoff.
1 Household Drivers = Population Age 16 and over – Persons in Group Quarters
2 Transit-Dependent Population Percentage = (Household Drivers – Autos Available)/Population (Age 16 and Over)

2.3.2.6 Community Characteristics

The area surrounding the I-15/Railroad Canyon interchange is heavily urbanized with commercial and residential uses. The following provides a description of these uses.

- **Northwest Quadrant (I-15/Railroad Canyon Road Interchange):** Existing land uses within this quadrant include a shopping center (Shoppers Square Shopping Center) between the I-15/Railroad Canyon Road interchange and Casino Drive and numerous fast-food restaurants, hotels, and office complexes along Casino Drive. Other existing land uses within this quadrant include a Ford car dealership located between I-15 and Auto Center Drive. Numerous multifamily and single-family residences are located north of Mill Street.
- **Northeast Quadrant (I-15/Railroad Canyon Road Interchange):** Current land uses in this quadrant include single-family residences, neighborhood shopping centers (containing gas stations, banks, and other services for the local population), and storage compounds along Canyon Estates Drive and Summerhill Drive. Several small businesses and fast-food restaurants (e.g., In-And-Out and Kentucky Fried Chicken) are also located in this quadrant.
- **Southwest Quadrant (I-15/Railroad Canyon Road Interchange):** Current uses in this quadrant include two neighborhood shopping centers, an animal hospital, several fast-food restaurants, and chain restaurants along Diamond Drive Boulevard.
- **Southeast Quadrant (I-15/Railroad Canyon Road Interchange):** Existing land uses within this quadrant include townhomes and a regional shopping center (including big-box retail, grocery store, and fast food restaurants) north of Grape Street.
- The area surrounding the planned I-15/Franklin Street interchange is less developed with lower densities and residential uses and vacant land. The following provides a description of these uses.
- **Northwest Quadrant (I-15/Franklin Street Interchange):** Current uses in this quadrant include vacant land and single-family residences.
- **Northeast Quadrant (I-15/Franklin Street Interchange):** Existing land use within this quadrant primarily consists of vacant land. There is one single-family residence located north of and adjacent to I-15.

- **Southwest Quadrant (I-15/Franklin Street Interchange):** Existing land uses within this quadrant consist of vacant land and single-family residences.
- **Southeast Quadrant (I-15/Franklin Street Interchange):** Currently, land within this quadrant is vacant property.

2.3.3 Environmental Consequences

2.3.3.1 Temporary Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

The No Build Alternative would not involve construction activities; therefore, there would be no impacts to community character or cohesion under this alternative.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

Temporary impacts associated with Alternative 2 may occur to existing community character and cohesion, including businesses and residences, as a result of disruptions associated with construction activities. In addition, temporary road detours and access restrictions during construction would affect residents living in the vicinity of the project census tract limits. Minor traffic delays in the project area may be encountered during construction; however, construction activities would be coordinated such that access to all properties in the project area would be maintained during construction.

No detours are anticipated for this project except for temporary closures necessary for construction staging. Temporary lane reductions or closures may occur when barriers are being moved into position, when lanes are being restriped, when falsework is being installed or removed, or when the freeway is being restored to its completed condition. These temporary closures would likely be limited to nonpeak travel hours.

Substantial disruptions to the local neighborhoods in the project area during construction are not anticipated and those temporary impacts would be substantially minimized by implementation of a Transportation Management Plan (TMP) as described in Section 2.7, Traffic and Transportation/Pedestrian and Bicycle Facilities.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

Temporary impacts associated with Alternative 3 would be the same as those identified for Alternative 2. Temporary road detours and access restrictions during construction would affect residents living in the vicinity of the project census tract limits. Minor traffic delays in the project area may be encountered during construction; however, construction activities would be coordinated such that access to all properties in the project area would be maintained during construction. Substantial disruptions to the local neighborhoods in the project area during construction are not anticipated and those temporary impacts would be substantially minimized by implementation of a TMP as described in Section 2.7, Traffic and Transportation/Pedestrian and Bicycle Facilities.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

Temporary impacts associated with Alternative 4 would be the same as those identified for Alternative 2. Temporary road detours and access restrictions during construction would affect residents living in the vicinity of the project census tract limits. Minor traffic delays in the project area may be encountered during construction; however, construction activities would be coordinated such that access to all properties in the project area would be maintained during construction. Substantial disruptions to the local neighborhoods in the project area during construction are not anticipated and those temporary impacts would be substantially minimized by implementation of a TMP as described in Section 2.7, Traffic and Transportation/Pedestrian and Bicycle Facilities.

2.3.3.2 Permanent Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

The No Build Alternative would not result in physical changes to the community; therefore, no community character or cohesion impacts would occur under this alternative.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

As discussed above, indicators that a community has a high degree of cohesion are racial and ethnic homogeneity, a large number of households with two or more people, a large number of long-term residents, high rates of homeownership, and a high percentage of elderly residents. Table 2.3.G provides a summary of each of these factors and details regarding how the study area meets or does not meet each factor.

Based on these factors, all of the census tracts demonstrate two indicators of community cohesion. Therefore, the study area census tracts demonstrate a moderately low community cohesion.

Under Alternative 2, planned improvements associated with the existing I-15/Railroad Canyon interchange would not adversely affect community cohesion in the area as no business or residential acquisition would occur, although the acquisition of vacant parcels would occur. The area surrounding the interchange is heavily commercialized and would remain heavily commercialized with implementation of the planned improvements. Existing residential areas surrounding the existing interchange would not be divided as improvements do not extend into these areas. Improvements made to the existing I-15/Railroad Canyon interchange would improve traffic operations in the area, which may indirectly improve traffic commute times for those working and residing in the area. No substantial adverse effects associated with community cohesion are anticipated with improvements made to the existing I-15/Railroad Canyon interchange under Alternative 2.

For the construction of the new I-15/Franklin Street interchange, Alternative 2 would require the acquisition of a residential unit south of the I-15 and north of existing Franklin Street, resulting in the displacement of the residents. As identified in Figure 2.3.1, the one residential unit to be acquired is located on the edge of the neighborhood. Adjacent parcels to the north, east, and west are currently vacant properties. Although this residential unit is located in a census tract that has a high potential for community cohesion, due to the large size of the census tract incorporating multiple neighborhoods, it is likely that the residents displaced could be relocated within their existing community.

As identified in Figure 2.3.1, property north of I-15 and north of existing Franklin Street is vacant. There is an existing neighborhood consisting of tract homes north of I-15 and south of existing Franklin Street. In addition, there is an apartment complex south of I-15 and south of existing Franklin Street along Auto Center Drive. The construction of the new I-15/Franklin Street interchange would not require acquisitions within these areas. These neighborhoods are already separated by existing roadways and the construction of this interchange would not change this existing condition.

Table 2.3.G: Community Cohesion Factors and Summary

Factor	Conclusion			
Racial and Ethnic Homogeneity	Census Tracts 427.15 and 464.04 are predominantly White (62.5% and 63.6%, respectively) while Census Tracts 430.01 and 430.06 are fairly evenly split between White and Hispanic residents. The City is predominantly White (60%) with Hispanic residents making up the bulk of the remaining population (48.0%).			
High Cohesion Potential?	**Census Tract 427.15**	**Census Tract 430.01**	**Census Tract 430.06**	**Census Tract 464.04**
	Yes	No	No	Yes
Households of Two or More People	The average household size for the study area census tracts is more than two people, but is lower than the average household size for the City. The household size for the County overall is greater than for the study area census tracts at 3.14 persons, with the exception of Census Tract 430.06 that exhibits an average household size of 3.22 persons.			
High Cohesion Potential?	**Census Tract 427.15**	**Census Tract 430.01**	**Census Tract 430.06**	**Census Tract 464.04**
	Yes	Yes	Yes	Yes
Long-Term Residents	Housing tenure for residents in Census Tract 427.15 is relatively short with 54.2% of homeowners moving into their housing units between 2000 and 2009. Additionally, 80.7% of renters within Census Tract 427.15 moved into their units between 2000 and 2009. The City overall has a relatively high proportion of long-term residents, with 54.6% and 66.2% of homeowners and renters, respectively, moving in before 2000.			
High Cohesion Potential?	**Census Tract 427.15**	**Census Tract 430.01**	**Census Tract 430.06**	**Census Tract 464.04**
	No	Yes	Yes	No
High Rates of Homeownership	Census Tract 427.15 has a high rate of homeownership (71.2%). The remaining three census tracts have a rate ranging from 44.2% to 69.8% of resident homeownership. Similarly, the City has a 66.0% rate of homeownership.			
High Cohesion Potential?	**Census Tract 427.15**	**Census Tract 430.01**	**Census Tract 430.06**	**Census Tract 464.04**
	Yes	No	No	No
High Percentage of Elderly Residents	The City and all of the study area census tracts have a relatively low percentage of residents who are over age 64 in comparison to the County's 11.8% of the total population. While all study area census tracts have a lower percentage of elderly residents than the County, all census tracts have a higher percentage of elderly residents compared to the City. Census Tract 430.06 has the lowest percentage of elderly residents (6.2%), which is comparable to the City's percentage (5.7%).			
High Cohesion Potential?	**Census Tract 427.15**	**Census Tract 430.01**	**Census Tract 430.06**	**Census Tract 464.04**
	No	No	No	No
Transit-Dependent Population	Census Tracts 430.01 and 430.06 demonstrate higher transit-dependent populations than the City or the County. However, Census Tracts 427.15 and 646.04 exhibit lower transit-dependent populations compared to the City and the County.			
High Cohesion Potential?	**Census Tract 427.15**	**Census Tract 430.01**	**Census Tract 430.06**	**Census Tract 464.04**
	No	Yes	Yes	No

City = City of Lake Elsinore
County = County of Riverside

Figure 2.3.1: Property Acquisitions for Alternatives 2 and 3

This page intentionally left blank

N

0 100 200

FEET

SOURCE: Google Earth, 2013; SC Engineering, 2014; Riverside County Parcel Data, 2014.

- Project Footprint
- Proposed ROW, Alternative 2
- Proposed ROW, Alternative 2 & 3
- Proposed ROW, Alternative 3
- Proposed ROW, Franklin
- Existing CalTrans ROW
- Existing Local ROW
- Proposed Temporary Construction Easement
- Alt 3 Pavement Edges
- Franklin Pavement Edges
- Freeway Pavement Edges
- Temporary Road
- Alt 2 Pavement Edges
- Alt 2 Alignment
- Soundwalls
- Parcel Boundaries

Impacted Parcels

- Access Control Only
- Full Acquisition
- Partial Acquisition
- Partial/Full - Alt 3 Only
- Partial Acquisition with Temporary Construction Easement
- Temporary Construction Easement

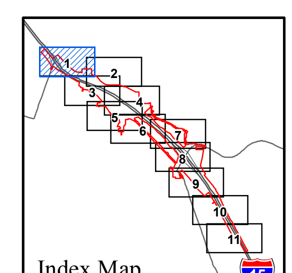


FIGURE 2.3.1
SHEET 1 OF 11

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Property Acquisitions Map for Alternatives 2 and 3

I:\SAE1401\Reports\IS_EA\fig2-3-1_Prop_Aquisitions_Mapbook_Alts2-3.mxd (11/15/2016)

This page intentionally left blank

0 100 200
FEET

SOURCE: Google Earth, 2013; SC Engineering, 2014; Riverside County Parcel Data, 2014.

- Project Footprint
- Proposed ROW, Alternative 2
- Proposed ROW, Alternative 2 & 3
- Proposed ROW, Alternative 3
- Proposed ROW, Franklin
- Existing CalTrans ROW
- Existing Local ROW
- Proposed Temporary Construction Easement
- Alt 3 Pavement Edges
- Franklin Pavement Edges
- Freeway Pavement Edges
- Temporary Road
- Alt 2 Pavement Edges
- Alt 2 Alignment
- Soundwalls
- Parcel Boundaries

Impacted Parcels

- Access Control Only
- Full Acquisition
- Partial Acquisition
- Partial/Full - Alt 3 Only
- Partial Acquisition with Temporary Construction Easement
- Temporary Construction Easement

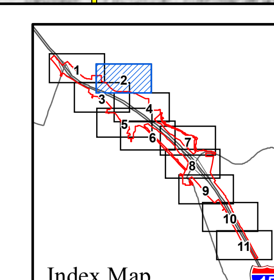


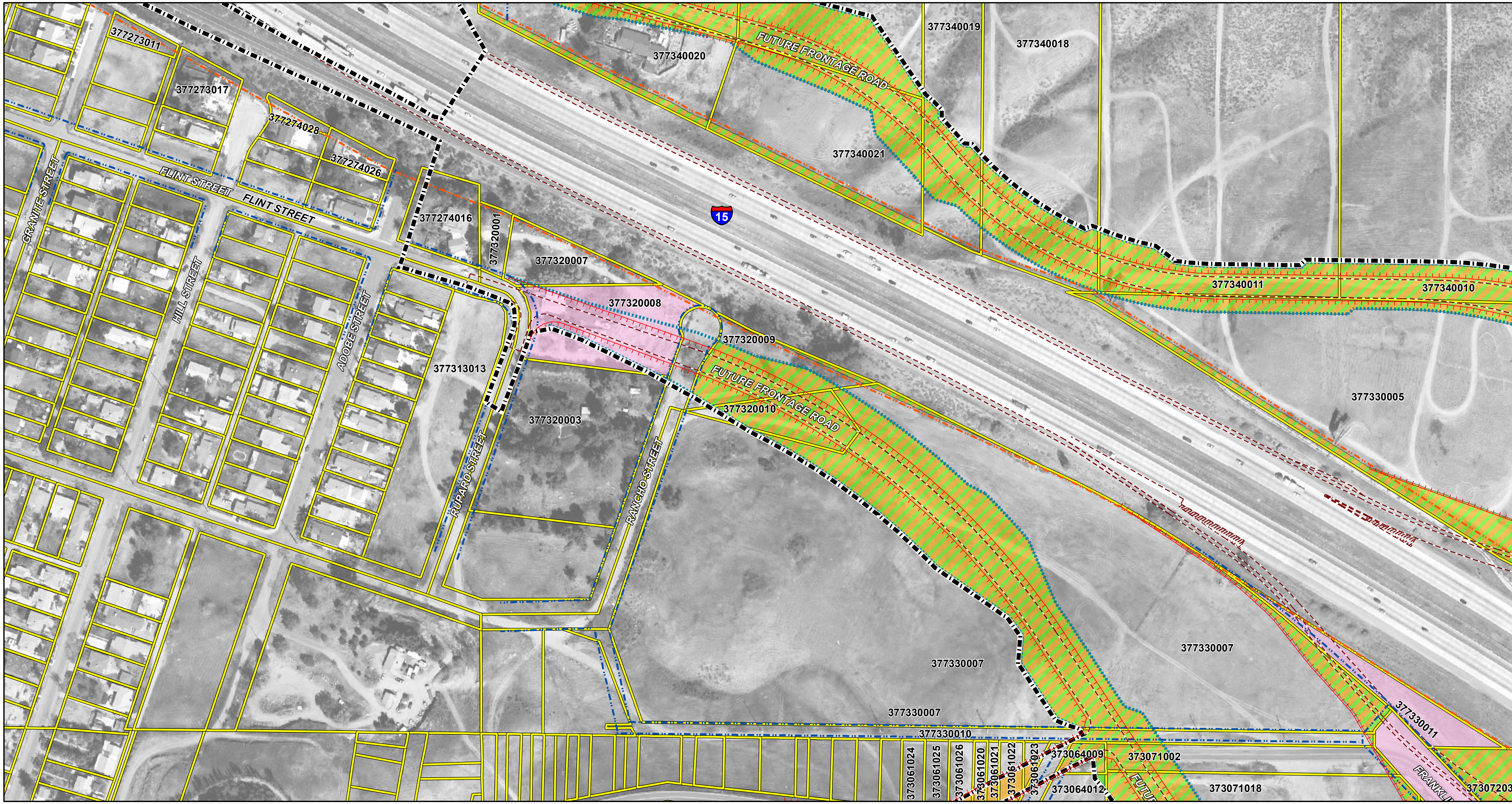
FIGURE 2.3.1
SHEET 2 OF 11

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Property Acquisitions Map for Alternatives 2 and 3

I:\SAE1401\Reports\IS_EA\fig2-3-1_Prop_Aquisitions_Mapbook_Alts2-3.mxd (11/15/2016)

This page intentionally left blank



N

0 100 200

FEET

SOURCE: Google Earth, 2013; SC Engineering, 2014; Riverside County Parcel Data, 2014.

Project Footprint
Proposed ROW, Alternative 2
Proposed ROW, Alternative 2 & 3
Proposed ROW, Alternative 3
Proposed ROW, Franklin
Existing CalTrans ROW
Existing Local ROW
Proposed Temporary Construction Easement
Alt 3 Pavement Edges
Franklin Pavement Edges
Freeway Pavement Edges
Temporary Road
Alt 2 Pavement Edges
Alt 2 Alignment
Soundwalls
Parcel Boundaries

Impacted Parcels

Access Control Only
Full Acquisition
Partial Acquisition
Partial/Full - Alt 3 Only
Partial Acquisition with Temporary Construction Easement
Temporary Construction Easement

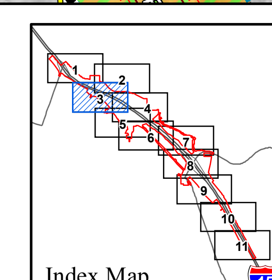


FIGURE 2.3.1

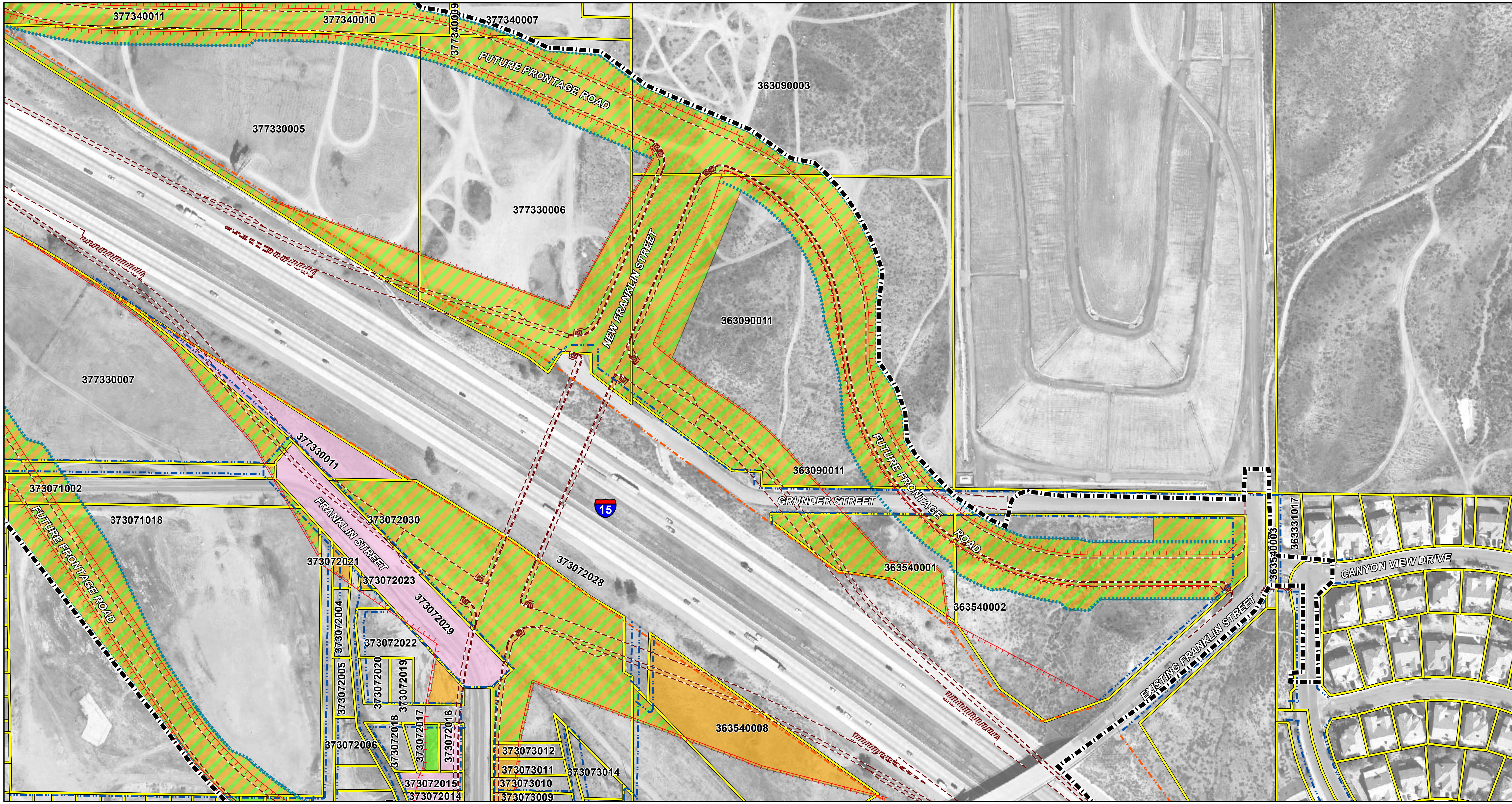
SHEET 3 OF 11

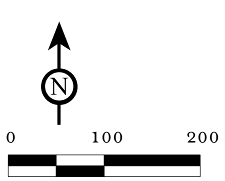
08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Property Acquisitions Map for Alternatives 2 and 3

I:\SAE1401\Reports\IS_EA\fig2-3-1_Prop_Aquisitions_Mapbook_Alts2-3.mxd (11/15/2016)

This page intentionally left blank





SOURCE: Google Earth, 2013; SC Engineering, 2014; Riverside County Parcel Data, 2014.

Project Footprint
Proposed ROW, Alternative 2
Proposed ROW, Alternative 2 & 3
Proposed ROW, Alternative 3
Proposed ROW, Franklin
Existing CalTrans ROW
Existing Local ROW
Proposed Temporary Construction Easement
Alt 3 Pavement Edges
Franklin Pavement Edges
Freeway Pavement Edges
Temporary Road
Alt 2 Pavement Edges
Alt 2 Alignment
Soundwalls
Parcel Boundaries

Impacted Parcels

Access Control Only
Full Acquisition
Partial Acquisition
Partial/Full - Alt 3 Only
Partial Acquisition with Temporary Construction Easement
Temporary Construction Easement

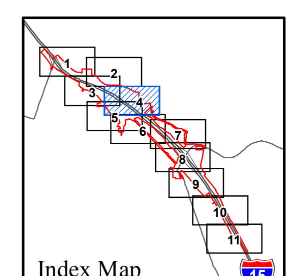


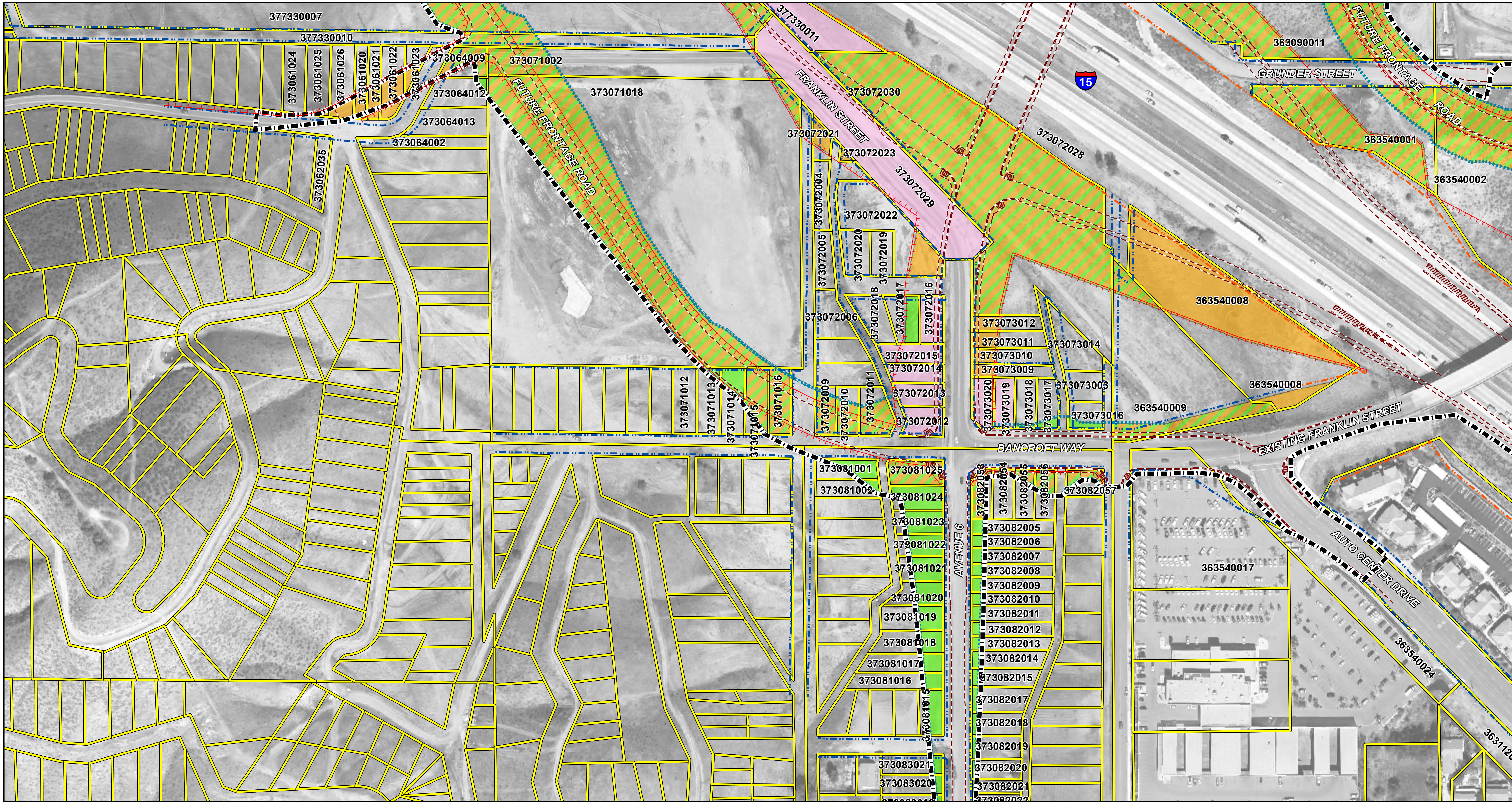
FIGURE 2.3.1
SHEET 4 OF 11

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Property Acquisitions Map for Alternatives 2 and 3

I:\SAE1401\Reports\IS_EA\fig2-3-1_Prop_Aquisitions_Mapbook_Alts2-3.mxd (11/15/2016)

This page intentionally left blank



N

0 100 200

FEET

SOURCE: Google Earth, 2013; SC Engineering, 2014; Riverside County Parcel Data, 2014.

- Project Footprint
- Proposed ROW, Alternative 2
- Proposed ROW, Alternative 2 & 3
- Proposed ROW, Alternative 3
- Proposed ROW, Franklin
- Existing CalTrans ROW
- Existing Local ROW
- Proposed Temporary Construction Easement
- Alt 3 Pavement Edges
- Franklin Pavement Edges
- Freeway Pavement Edges
- Temporary Road
- Alt 2 Pavement Edges
- Alt 2 Alignment
- Soundwalls
- Parcel Boundaries

Impacted Parcels

- Access Control Only
- Full Acquisition
- Partial Acquisition
- Partial/Full - Alt 3 Only
- Partial Acquisition with Temporary Construction Easement
- Temporary Construction Easement

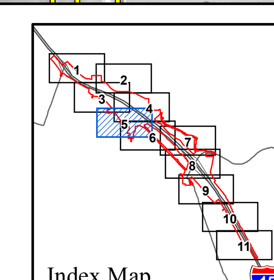


FIGURE 2.3.1
SHEET 5 OF 11

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Property Acquisitions Map for Alternatives 2 and 3

I:\SAE1401\Reports\IS_EA\fig2-3-1_Prop_Aquisitions_Mapbook_Alts2-3.mxd (11/15/2016)

This page intentionally left blank

N

0 100 200

FEET

SOURCE: Google Earth, 2013; SC Engineering, 2014; Riverside County Parcel Data, 2014.

- Project Footprint
- Proposed ROW, Alternative 2
- Proposed ROW, Alternative 2 & 3
- Proposed ROW, Alternative 3
- Proposed ROW, Franklin
- Existing CalTrans ROW
- Existing Local ROW
- Proposed Temporary Construction Easement
- Alt 3 Pavement Edges
- Franklin Pavement Edges
- Freeway Pavement Edges
- Temporary Road
- Alt 2 Pavement Edges
- Alt 2 Alignment
- Soundwalls
- Parcel Boundaries

Impacted Parcels

- Access Control Only
- Full Acquisition
- Partial Acquisition
- Partial/Full - Alt 3 Only
- Partial Acquisition with Temporary Construction Easement
- Temporary Construction Easement

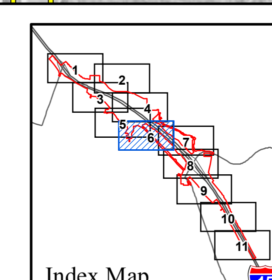


FIGURE 2.3.1

SHEET 6 OF 11

08-RIV-15-PM 18.3/21.0

EA. 0A4400

I-15/Railroad Canyon Road Interchange

Initial Study/Environmental Assessment

Property Acquisitions Map for Alternatives 2 and 3

I:\SAE1401\Reports\IS_EA\fig2-3-1_Prop_Aquisitions_Mapbook_Alts2-3.mxd (11/15/2016)

This page intentionally left blank

Project Footprint
Proposed ROW, Alternative 2
Proposed ROW, Alternative 2 & 3
Proposed ROW, Alternative 3
Proposed ROW, Franklin
Existing CalTrans ROW
Existing Local ROW
Proposed Temporary Construction Easement
Alt 3 Pavement Edges
Franklin Pavement Edges
Freeway Pavement Edges
Temporary Road
Alt 2 Pavement Edges
Alt 2 Alignment
Soundwalls
Parcel Boundaries

Impacted Parcels

Access Control Only
Full Acquisition
Partial Acquisition
Partial/Full - Alt 3 Only
Partial Acquisition with Temporary Construction Easement
Temporary Construction Easement

N

0 100 200
FEET

SOURCE: Google Earth, 2013; SC Engineering, 2014; Riverside County Parcel Data, 2014.

Index Map

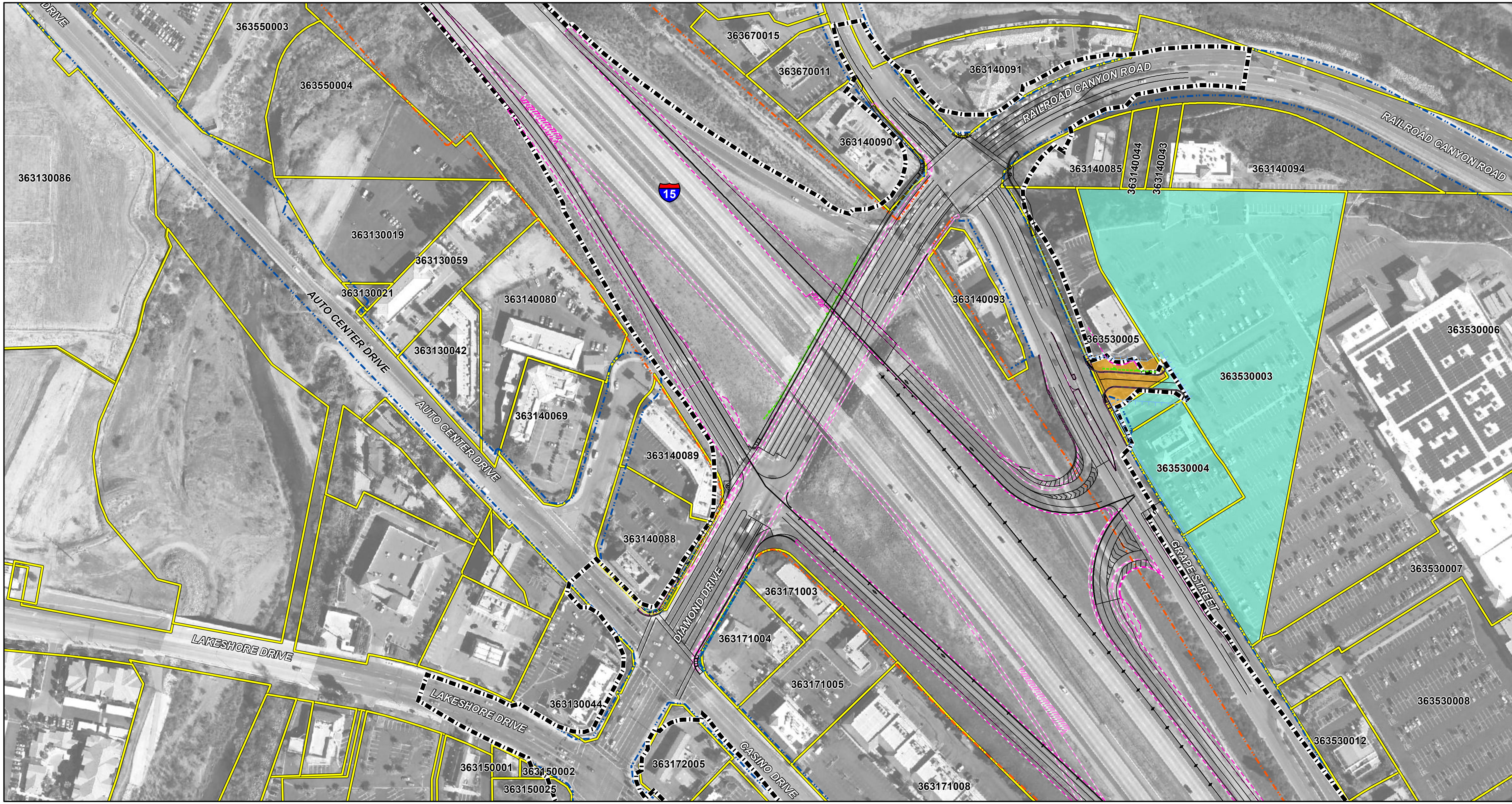
FIGURE 2.3.1
SHEET 7 OF 11

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Property Acquisitions Map for Alternatives 2 and 3

I:\SAE1401\Reports\IS_EA\fig2-3-1_Prop_Aquisitions_Mapbook_Alts2-3.mxd (11/15/2016)

This page intentionally left blank



0 100 200
FEET

SOURCE: Google Earth, 2013; SC Engineering, 2014; Riverside County Parcel Data, 2014.

- Project Footprint
- Proposed ROW, Alternative 2
- Proposed ROW, Alternative 2 & 3
- Proposed ROW, Alternative 3
- Proposed ROW, Franklin
- Existing CalTrans ROW
- Existing Local ROW
- Proposed Temporary Construction Easement
- Alt 3 Pavement Edges
- Franklin Pavement Edges
- Freeway Pavement Edges
- Temporary Road
- Alt 2 Pavement Edges
- Alt 2 Alignment
- Soundwalls
- Parcel Boundaries

Impacted Parcels

- Access Control Only
- Full Acquisition
- Partial Acquisition
- Partial/Full - Alt 3 Only
- Partial Acquisition with Temporary Construction Easement
- Temporary Construction Easement

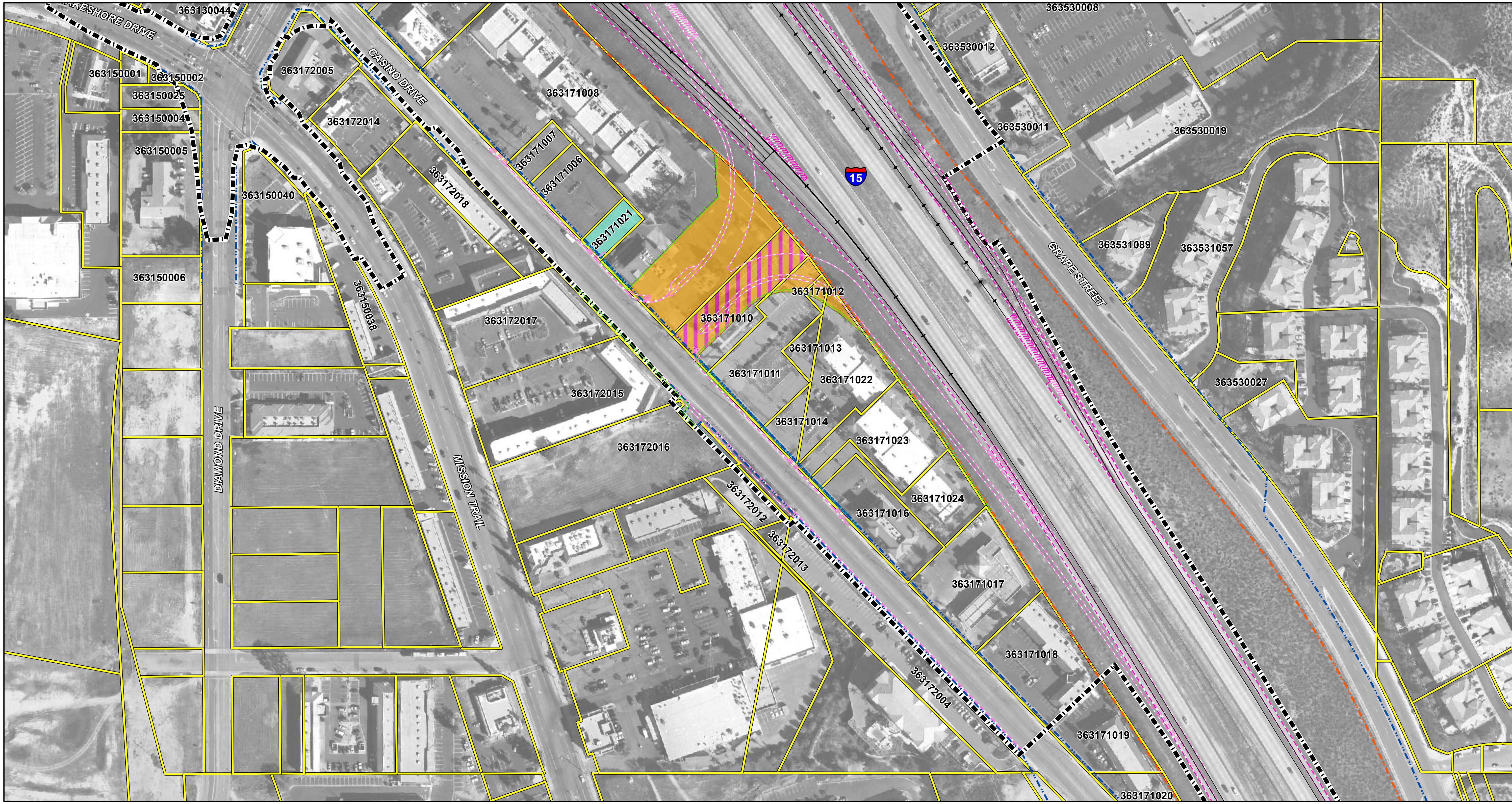
FIGURE 2.3.1
SHEET 8 OF 11

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Property Acquisitions Map for Alternatives 2 and 3

I:\SAE1401\Reports\IS_EA\fig2-3-1_Prop_Aquisitions_Mapbook_Alts2-3.mxd (11/15/2016)

This page intentionally left blank



N

0 100 200

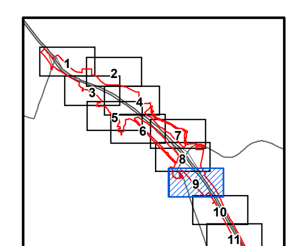
FEET

SOURCE: Google Earth, 2013; SC Engineering, 2014; Riverside County Parcel Data, 2014.

Project Footprint
Proposed ROW, Alternative 2
Proposed ROW, Alternative 2 & 3
Proposed ROW, Alternative 3
Proposed ROW, Franklin
Existing CalTrans ROW
Existing Local ROW
Proposed Temporary Construction Easement
Alt 3 Pavement Edges
Franklin Pavement Edges
Freeway Pavement Edges
Temporary Road
Alt 2 Pavement Edges
Alt 2 Alignment
Soundwalls
Parcel Boundaries

Impacted Parcels

Access Control Only
Full Acquisition
Partial Acquisition
Partial/Full - Alt 3 Only
Partial Acquisition with Temporary Construction Easement
Temporary Construction Easement



Index Map

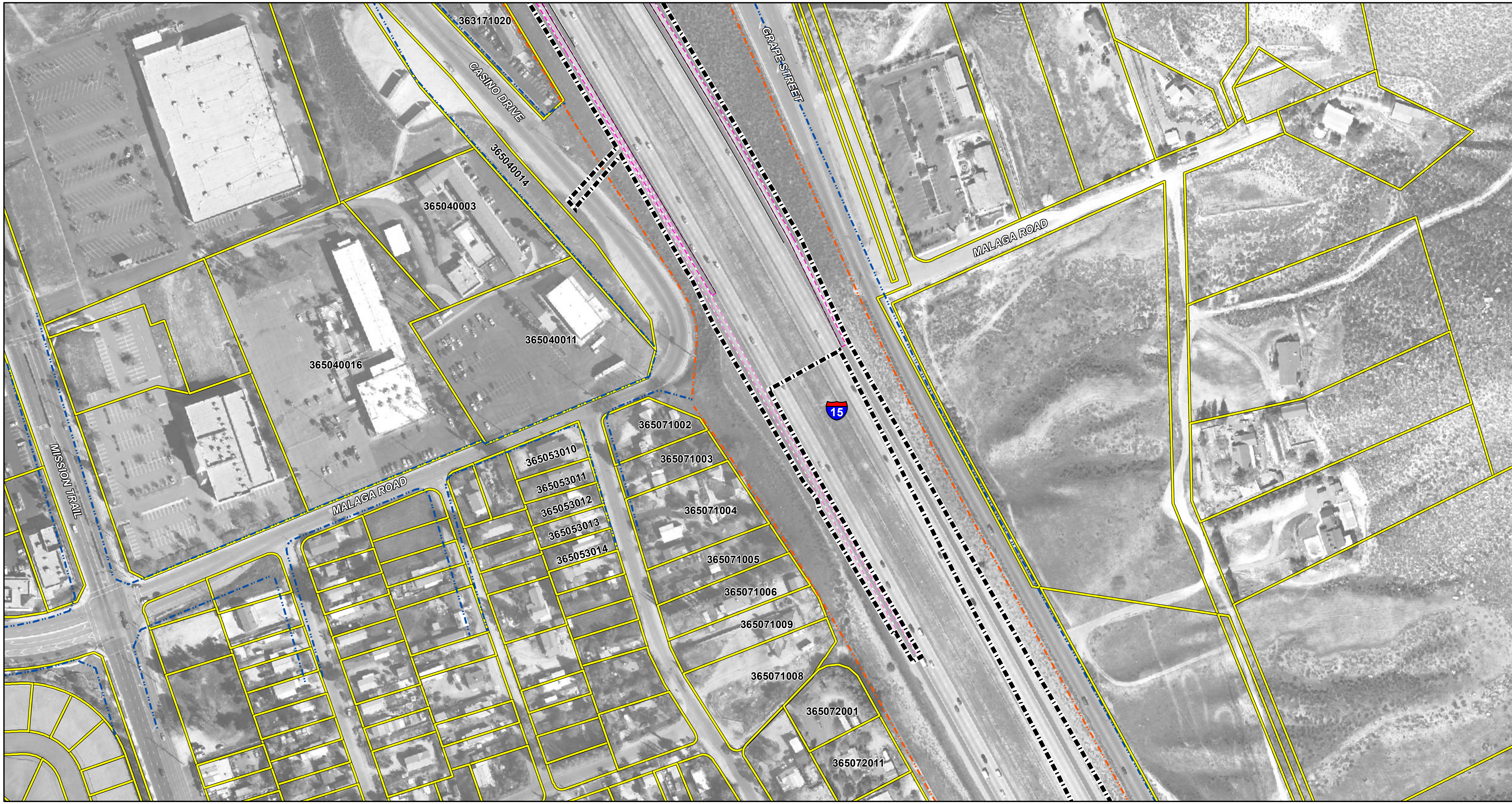
FIGURE 2.3.1
SHEET 9 OF 11

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Property Acquisitions Map for Alternatives 2 and 3

I:\SAE1401\Reports\IS_EA\fig2-3-1_Prop_Aquisitions_Mapbook_Alts2-3.mxd (11/15/2016)

This page intentionally left blank



Project Footprint
Proposed ROW, Alternative 2
Proposed ROW, Alternative 2 & 3
Proposed ROW, Alternative 3
Proposed ROW, Franklin
Existing CalTrans ROW
Existing Local ROW
Proposed Temporary Construction Easement
Alt 3 Pavement Edges
Franklin Pavement Edges
Freeway Pavement Edges
Temporary Road
Alt 2 Pavement Edges
Alt 2 Alignment
Soundwalls
Parcel Boundaries

Impacted Parcels

Access Control Only
Full Acquisition
Partial Acquisition
Partial/Full - Alt 3 Only
Partial Acquisition with Temporary Construction Easement
Temporary Construction Easement

N
0 100 200
FEET

SOURCE: Google Earth, 2013; SC Engineering, 2014; Riverside County Parcel Data, 2014.

Index Map

FIGURE 2.3.1
SHEET 10 OF 11

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Property Acquisitions Map for Alternatives 2 and 3

I:\SAE1401\Reports\IS_EA\fig2-3-1_Prop_Aquisitions_Mapbook_Alts2-3.mxd (11/15/2016)

This page intentionally left blank

0 100 200
FEET

SOURCE: Google Earth, 2013; SC Engineering, 2014; Riverside County Parcel Data, 2014.

Project Footprint
Proposed ROW, Alternative 2
Proposed ROW, Alternative 2 & 3
Proposed ROW, Alternative 3
Proposed ROW, Franklin
Existing CalTrans ROW
Existing Local ROW
Proposed Temporary Construction Easement
Alt 3 Pavement Edges
Franklin Pavement Edges
Freeway Pavement Edges
Temporary Road
Alt 2 Pavement Edges
Alt 2 Alignment
Soundwalls
Parcel Boundaries

Impacted Parcels

Access Control Only
Full Acquisition
Partial Acquisition
Partial/Full - Alt 3 Only
Partial Acquisition with Temporary Construction Easement
Temporary Construction Easement

Index Map

FIGURE 2.3.1
SHEET 11 OF 11

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Property Acquisitions Map for Alternatives 2 and 3

I:\SAE1401\Reports\IS_EA\fig2-3-1_Prop_Aquisitions_Mapbook_Alts2-3.mxd (11/15/2016)

This page intentionally left blank

Construction of the new I-15/Franklin Street interchange would increase accessibility in the area, which may indirectly improve traffic commute times for those working and residing in the area as travelers would no longer have to drive to Railroad Canyon Road or Main Street to get onto I-15. Although the new I-15/Franklin Street interchange would contribute to the eventual urbanization of the area, this eventual change in land use has been identified in the City's General Plan. No substantial adverse effects associated with community cohesion are anticipated with construction of the new I-15/Franklin Street interchange under Alternative 2. Therefore, no adverse impacts to community cohesion would occur with this alternative.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

Under Alternative 3, two businesses (Pizza Hut and Sizzler) would be displaced by the proposed improvements made to the existing I-15/Railroad Canyon interchange. Due to the current fragmented nature of this cluster of commercial properties (due to other land uses interspersed with the properties), these business acquisitions would not divide an existing neighborhood or fragment the edge of a cohesive group of people. The area surrounding the interchange is heavily commercialized and would remain heavily commercialized with implementation of the proposed improvements. Existing residential areas surrounding the existing interchange would not be divided as improvements do not extend into these areas.

Improvements made to the existing I-15/Railroad Canyon interchange would improve traffic operations in the area, which may indirectly improve traffic commute times for those working and residing in the area. No substantial adverse effects associated with community cohesion are anticipated with improvements made to the existing I-15/Railroad Canyon interchange under Alternative 3.

As identified for Alternative 2, for the construction of the new I-15/Franklin Street interchange, Alternative 3 would also require the acquisition of the same residential unit south of the I-15 and north of existing Franklin Street, resulting in the displacement of those residents. Effects associated with the construction of the I-15/Franklin Street interchange would be the same as those identified for Alternative 2 as the same residential unit would be displaced under either alternative. No substantial adverse effects associated with community cohesion are anticipated with construction of the new I-15/Franklin Street interchange under Alternative 3. Therefore, no adverse impacts to community cohesion would occur with this alternative.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

Under Alternative 4, the proposed improvements associated with the existing I-15/Railroad Canyon interchange would not result in the displacement of businesses; however, partial acquisition of business properties and vacant land would occur. The area surrounding the interchange is heavily commercialized and would remain heavily commercialized with implementation of the proposed improvements. With no displacement of businesses, the proposed improvements of Alternative 4 would not result in obstructions or barriers that could disrupt the cohesion or character of the community. Existing residential areas surrounding the existing interchange would not be divided as improvements do not extend into these areas. Improvements made to the existing I-15/Railroad Canyon interchange would improve traffic operations in the area, which may indirectly improve traffic commute times for those working and residing in the area. No substantial adverse effects associated with community cohesion are anticipated with improvements made to the existing I-15/Railroad Canyon interchange under Alternative 4.

For the construction of the new I-15/Franklin Street interchange, Alternative 4 would require the acquisition of one residential parcel. As noted above, due to the large size of the census tract incorporating multiple neighborhoods, it is likely that the occupants of the single residence displaced could be relocated within their existing community.

As identified in Figure 2.3.2, property north of I-15 and north of existing Franklin Street is vacant. There is an existing neighborhood consisting of tract homes north of I-15 and south of existing Franklin Street. In addition, there is an apartment complex south of I-15 and south of existing Franklin Street along Auto Center Drive. The construction of the new I-15/Franklin Street interchange would not require acquisitions within these areas. These neighborhoods are already separated by existing roadways and the construction of this interchange would not change this existing condition.

Construction of the new I-15/Franklin Street interchange would increase accessibility in the area, which may indirectly improve traffic commute times for those working and residing in the area as travelers would no longer have to drive to Railroad Canyon Road or Main Street to get onto I-15. Although the new I-15/Franklin Street interchange would contribute to the eventual urbanization of the area, this eventual change in land use has been identified in the City's General Plan. No substantial adverse effects associated with community cohesion are anticipated with construction of the new I-15/Franklin Street interchange under Alternative 4. Therefore, no adverse impacts to community cohesion would occur with this alternative.

CEQA DISCUSSION

Would the project:

X. a) Physically divide an established community?

No Impact. The project site is currently developed with the existing I-15 freeway facility, ramps, and access roads. Surrounding land uses in the vicinity of Railroad Canyon Road consist of medium-density residential, general commercial, tourist commercial, commercial mixed-use, and specific plan land uses. Surrounding land uses in the vicinity of Franklin Street consist of medium-density residential, mountainous residential, mixed-use, freeway business, general commercial, and specific plan land uses. Many parcels surrounding the project site to the east and west are mass graded for a residential development; however, this residential development was never completed and the property is still vacant. The mix of urban uses and undeveloped land within the surrounding area does not constitute an established neighborhood. Therefore, the site would not be located within or divide an existing neighborhood. In contrast, the division of an established community usually results from the construction of a new feature such as a highway or railroad tracks or removal of access to a community. In addition, the project is an enhancement to the existing facility. The existing I-15 freeway facility would still operate with implementation of this change of operations. Since the project would still result in the continuation of existing activities on the project site and since no division of community would occur, no impacts would occur. No mitigation measures are required.

2.3.4 Avoidance, Minimization, and/or Mitigation Measures

Implementation of a TMP (discussed in further detail in Section 2.7, Traffic and Transportation/ Pedestrian and Bicycle Facilities) would minimize temporary construction-related impacts of Alternative 2, Alternative 3, and Alternative 4 related to community character and cohesion. In addition, there are adequate replacement housing and business properties in the area; refer to Section 2.4 (Relocation and Property Acquisition) for a discussion and data regarding available properties.

N

0 100 200

Feet

Project Footprint
Proposed ROW, Alternative 2
Proposed ROW, Alternative 2 & 3
Proposed ROW, Alternative 3
Proposed ROW, Franklin
Existing CalTrans ROW
Existing Local ROW
Proposed Temporary Construction Easement
Alt 3 Pavement Edges
Franklin Pavement Edges
Freeway Pavement Edges
Temporary Road
Alt 2 Pavement Edges
Alt 2 Alignment
Soundwalls
Parcel Boundaries

Impacted Parcels

Access Control Only
Full Acquisition
Partial Acquisition
Partial/Full - Alt 3 Only
Partial Acquisition with Temporary Construction Easement
Temporary Construction Easement

Index Map

SOURCE: Google Earth, 2013; SC Engineering, 2014; Riverside County Parcel Data, 2014.

FIGURE 2.3.1
SHEET 1 OF 11

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Property Acquisitions Map for Alternatives 2 and 3

I:\SAE1401\Reports\IS_EA\fig2-3-1_Prop_Aquisitions_Mapbook_Alts2-3.mxd (11/15/2016)

This page intentionally left blank

Project Footprint
Proposed ROW, Alternative 2
Proposed ROW, Alternative 2 & 3
Proposed ROW, Alternative 3
Proposed ROW, Franklin
Existing CalTrans ROW
Existing Local ROW
Proposed Temporary Construction Easement
Alt 3 Pavement Edges
Franklin Pavement Edges
Freeway Pavement Edges
Temporary Road
Alt 2 Pavement Edges
Alt 2 Alignment
Soundwalls
Parcel Boundaries

Impacted Parcels

Access Control Only
Full Acquisition
Partial Acquisition
Partial/Full - Alt 3 Only
Partial Acquisition with Temporary Construction Easement
Temporary Construction Easement

N

0 100 200

FEET

SOURCE: Google Earth, 2013; SC Engineering, 2014; Riverside County Parcel Data, 2014.

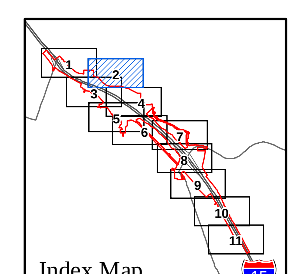


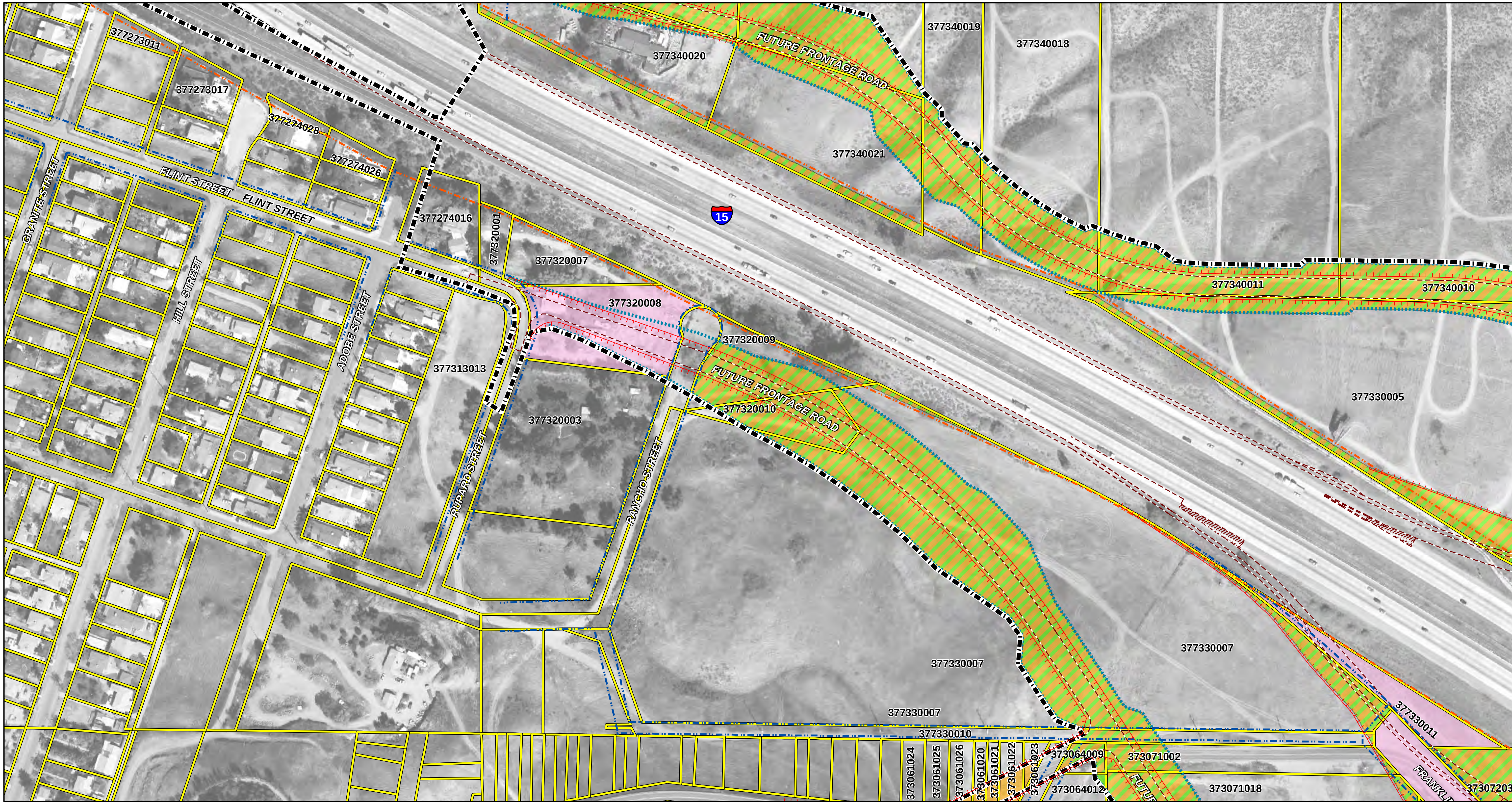
FIGURE 2.3.1
SHEET 2 OF 11

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Property Acquisitions Map for Alternatives 2 and 3

I:\SAE1401\Reports\IS_EA\fig2-3-1_Prop_Aquisitions_Mapbook_Alts2-3.mxd (11/15/2016)

This page intentionally left blank



N

0 100 200

FEET

- Project Footprint
- Proposed ROW, Alternative 2
- Proposed ROW, Alternative 2 & 3
- Proposed ROW, Alternative 3
- Proposed ROW, Franklin
- Existing CalTrans ROW
- Existing Local ROW
- Proposed Temporary Construction Easement
- Alt 3 Pavement Edges
- Franklin Pavement Edges
- Freeway Pavement Edges
- Temporary Road
- Alt 2 Pavement Edges
- Alt 2 Alignment
- Soundwalls
- Parcel Boundaries

Impacted Parcels

- Access Control Only
- Full Acquisition
- Partial Acquisition
- Partial/Full - Alt 3 Only
- Partial Acquisition with Temporary Construction Easement
- Temporary Construction Easement

SOURCE: Google Earth, 2013; SC Engineering, 2014; Riverside County Parcel Data, 2014.

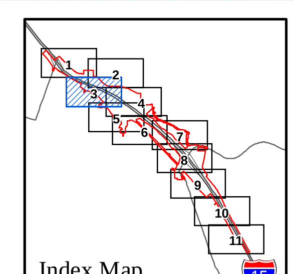


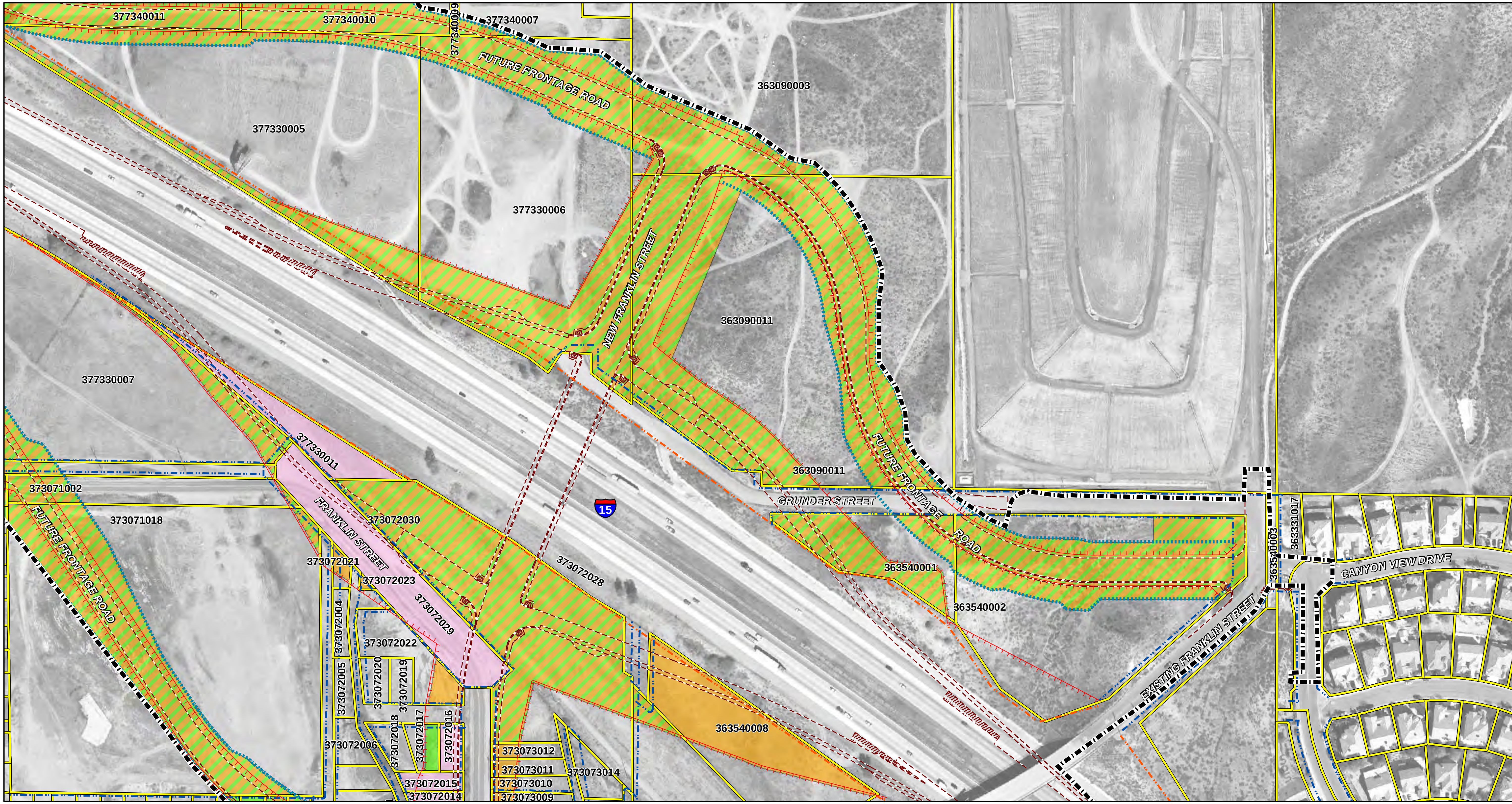
FIGURE 2.3.1
SHEET 3 OF 11

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Property Acquisitions Map for Alternatives 2 and 3

I:\SAE1401\Reports\IS_EA\fig2-3-1_Prop_Aquisitions_Mapbook_Alts2-3.mxd (11/15/2016)

This page intentionally left blank



Project Footprint
Proposed ROW, Alternative 2
Proposed ROW, Alternative 2 & 3
Proposed ROW, Alternative 3
Proposed ROW, Franklin
Existing CalTrans ROW
Existing Local ROW
Proposed Temporary Construction Easement
Alt 3 Pavement Edges
Franklin Pavement Edges
Freeway Pavement Edges
Temporary Road
Alt 2 Pavement Edges
Alt 2 Alignment
Soundwalls
Parcel Boundaries

Impacted Parcels

Access Control Only
Full Acquisition
Partial Acquisition
Partial/Full - Alt 3 Only
Partial Acquisition with Temporary Construction Easement
Temporary Construction Easement

SOURCE: Google Earth, 2013; SC Engineering, 2014; Riverside County Parcel Data, 2014.

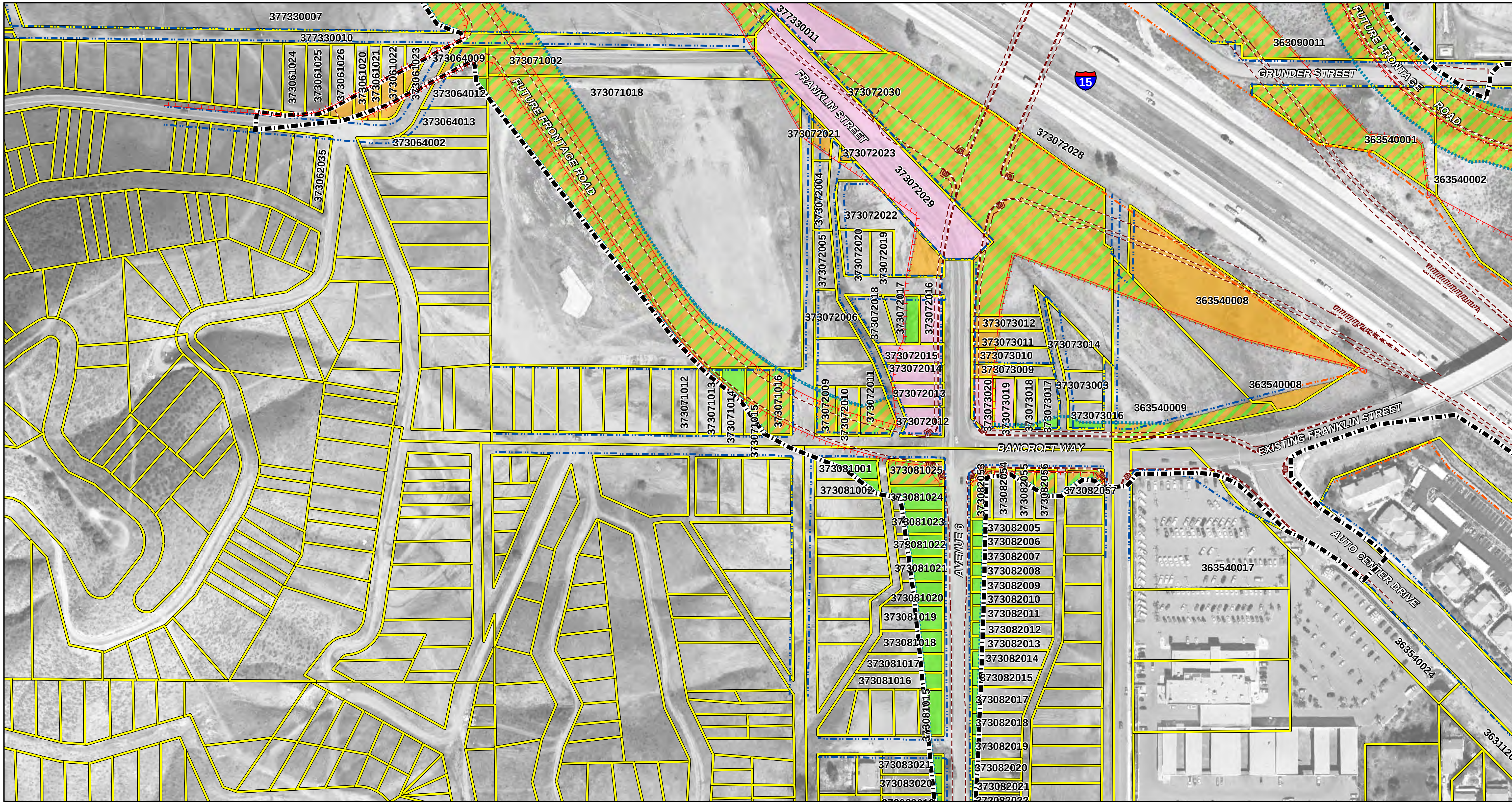
FIGURE 2.3.1
SHEET 4 OF 11

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Property Acquisitions Map for Alternatives 2 and 3

I:\SAE1401\Reports\IS_EA\fig2-3-1_Prop_Aquisitions_Mapbook_Alts2-3.mxd (11/15/2016)

This page intentionally left blank



N

0 100 200

FEET

SOURCE: Google Earth, 2013; SC Engineering, 2014; Riverside County Parcel Data, 2014.

- Project Footprint
- Proposed ROW, Alternative 2
- Proposed ROW, Alternative 2 & 3
- Proposed ROW, Alternative 3
- Proposed ROW, Franklin
- Existing CalTrans ROW
- Existing Local ROW
- Proposed Temporary Construction Easement
- Alt 3 Pavement Edges
- Franklin Pavement Edges
- Freeway Pavement Edges
- Temporary Road
- Alt 2 Pavement Edges
- Alt 2 Alignment
- Soundwalls
- Parcel Boundaries

Impacted Parcels

- Access Control Only
- Full Acquisition
- Partial Acquisition
- Partial/Full - Alt 3 Only
- Partial Acquisition with Temporary Construction Easement
- Temporary Construction Easement

Index Map

1 2 3 4 5 6 7 8 9 10 11

FIGURE 2.3.1

SHEET 5 OF 11

08-RIV-15-PM 18.3/21.0

EA. 0A4400

I-15/Railroad Canyon Road Interchange

Initial Study/Environmental Assessment

Property Acquisitions Map for Alternatives 2 and 3

This page intentionally left blank

N

0 100 200

FEET

SOURCE: Google Earth, 2013; SC Engineering, 2014; Riverside County Parcel Data, 2014.

- Project Footprint
- Proposed ROW, Alternative 2
- Proposed ROW, Alternative 2 & 3
- Proposed ROW, Alternative 3
- Proposed ROW, Franklin
- Existing CalTrans ROW
- Existing Local ROW
- Proposed Temporary Construction Easement
- Alt 3 Pavement Edges
- Franklin Pavement Edges
- Freeway Pavement Edges
- Temporary Road
- Alt 2 Pavement Edges
- Alt 2 Alignment
- Soundwalls
- Parcel Boundaries

Impacted Parcels

- Access Control Only
- Full Acquisition
- Partial Acquisition
- Partial/Full - Alt 3 Only
- Partial Acquisition with Temporary Construction Easement
- Temporary Construction Easement

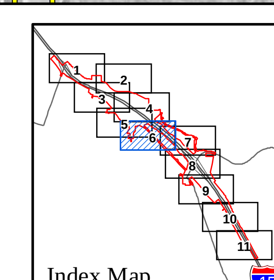


FIGURE 2.3.1

SHEET 6 OF 11

08-RIV-15-PM 18.3/21.0

EA. 0A4400

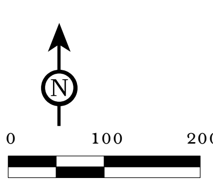
I-15/Railroad Canyon Road Interchange

Initial Study/Environmental Assessment

Property Acquisitions Map for Alternatives 2 and 3

I:\SAE1401\Reports\IS_EA\fig2-3-1_Prop_Aquisitions_Mapbook_Alts2-3.mxd (11/15/2016)

This page intentionally left blank



Project Footprint
Proposed ROW, Alternative 2
Proposed ROW, Alternative 2 & 3
Proposed ROW, Alternative 3
Proposed ROW, Franklin
Existing CalTrans ROW
Existing Local ROW
Proposed Temporary Construction Easement
Alt 3 Pavement Edges
Franklin Pavement Edges
Freeway Pavement Edges
Temporary Road
Alt 2 Pavement Edges
Alt 2 Alignment
Soundwalls
Parcel Boundaries

Impacted Parcels

Access Control Only
Full Acquisition
Partial Acquisition
Partial/Full - Alt 3 Only
Partial Acquisition with Temporary Construction Easement
Temporary Construction Easement

SOURCE: Google Earth, 2013; SC Engineering, 2014; Riverside County Parcel Data, 2014.

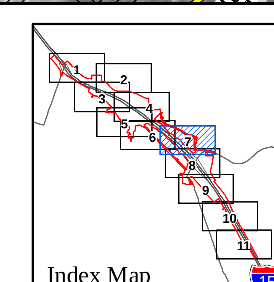


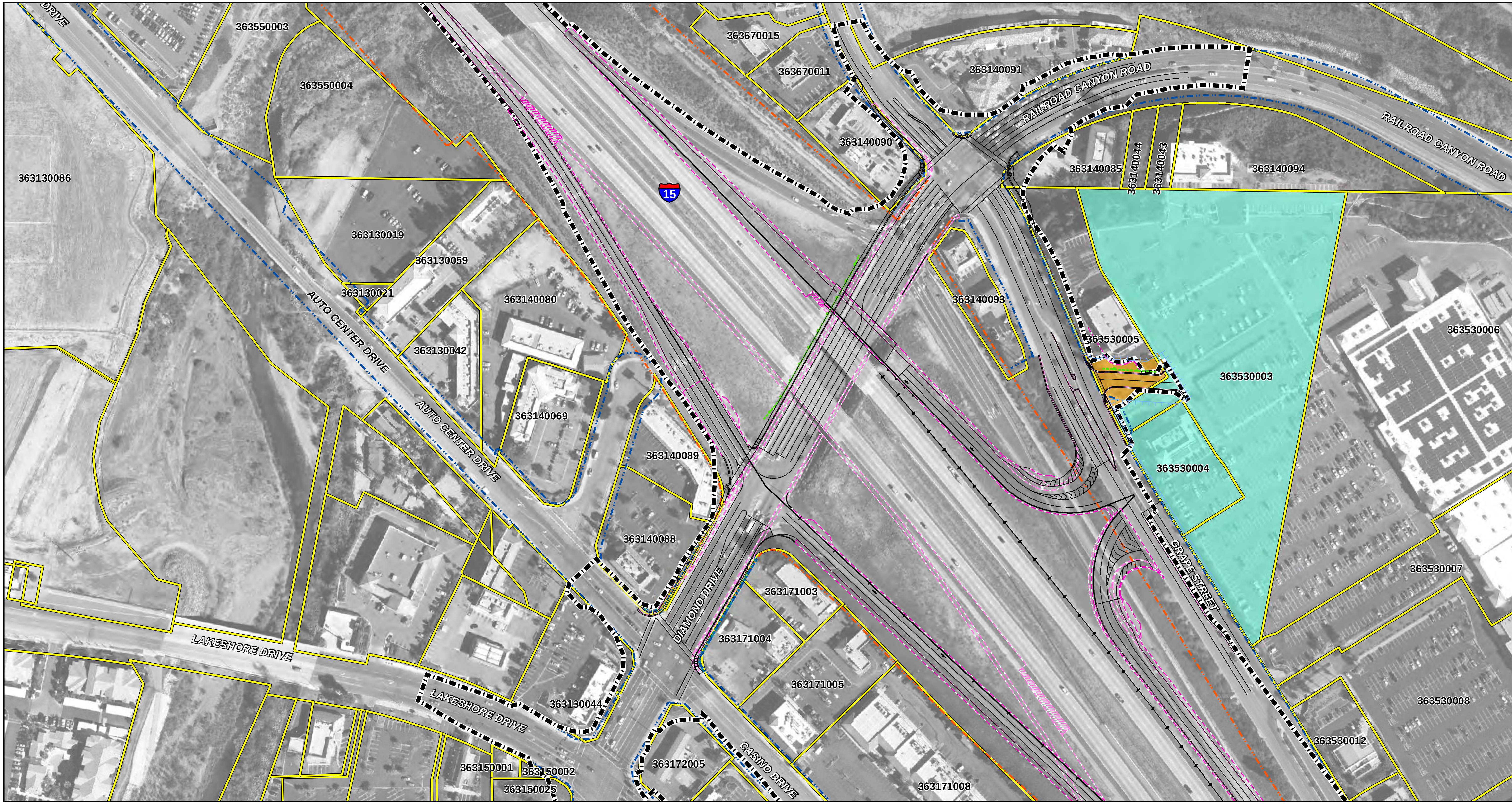
FIGURE 2.3.1
SHEET 7 OF 11

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Property Acquisitions Map for Alternatives 2 and 3

I:\SAE1401\Reports\IS_EA\fig2-3-1_Prop_Aquisitions_Mapbook_Alts2-3.mxd (11/15/2016)

This page intentionally left blank



N
0 100 200
FEET

SOURCE: Google Earth, 2013; SC Engineering, 2014; Riverside County Parcel Data, 2014.

- Project Footprint
- Proposed ROW, Alternative 2
- Proposed ROW, Alternative 2 & 3
- Proposed ROW, Alternative 3
- Proposed ROW, Franklin
- Existing CalTrans ROW
- Existing Local ROW
- Proposed Temporary Construction Easement
- Alt 3 Pavement Edges
- Franklin Pavement Edges
- Freeway Pavement Edges
- Temporary Road
- Alt 2 Pavement Edges
- Alt 2 Alignment
- Soundwalls
- Parcel Boundaries

Impacted Parcels

- Access Control Only
- Full Acquisition
- Partial Acquisition
- Partial/Full - Alt 3 Only
- Partial Acquisition with Temporary Construction Easement
- Temporary Construction Easement

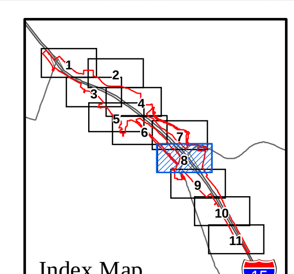


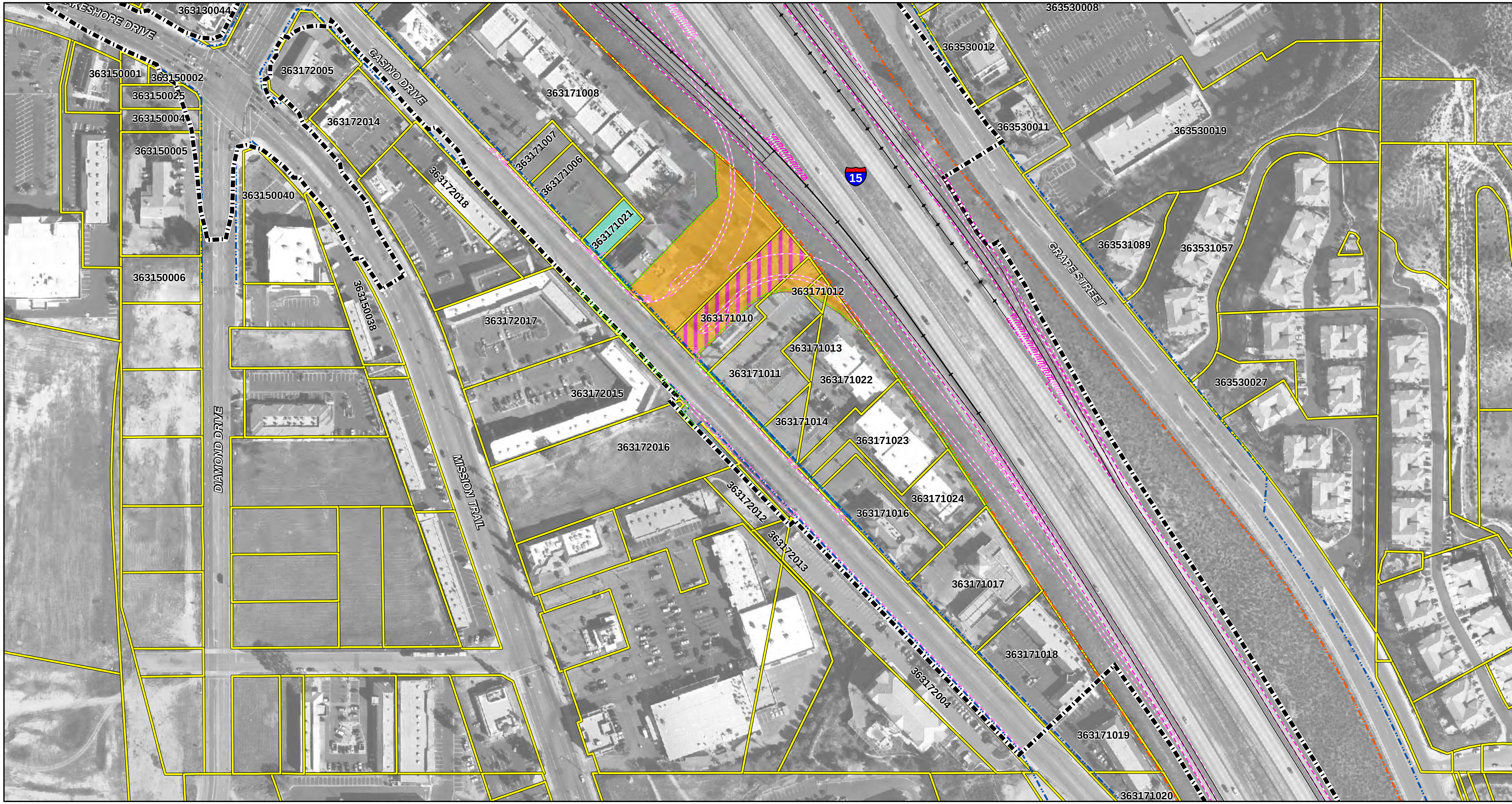
FIGURE 2.3.1
SHEET 8 OF 11

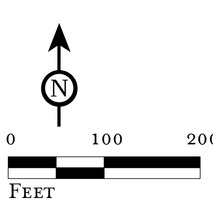
08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Property Acquisitions Map for Alternatives 2 and 3

I:\SAE1401\Reports\IS_EA\fig2-3-1_Prop_Aquisitions_Mapbook_Alts2-3.mxd (11/15/2016)

This page intentionally left blank





Project Footprint

Proposed ROW, Alternative 2

Proposed ROW, Alternative 2 & 3

Proposed ROW, Alternative 3

Proposed ROW, Franklin

Existing CalTrans ROW

Existing Local ROW

Proposed Temporary Construction Easement

Alt 3 Pavement Edges

Franklin Pavement Edges

Freeway Pavement Edges

Temporary Road

Alt 2 Pavement Edges

Alt 2 Alignment

Soundwalls

Parcel Boundaries

Impacted Parcels

Access Control Only

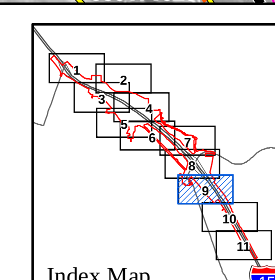
Full Acquisition

Partial Acquisition

Partial/Full - Alt 3 Only

Partial Acquisition with Temporary Construction Easement

Temporary Construction Easement



SOURCE: Google Earth, 2013; SC Engineering, 2014; Riverside County Parcel Data, 2014.

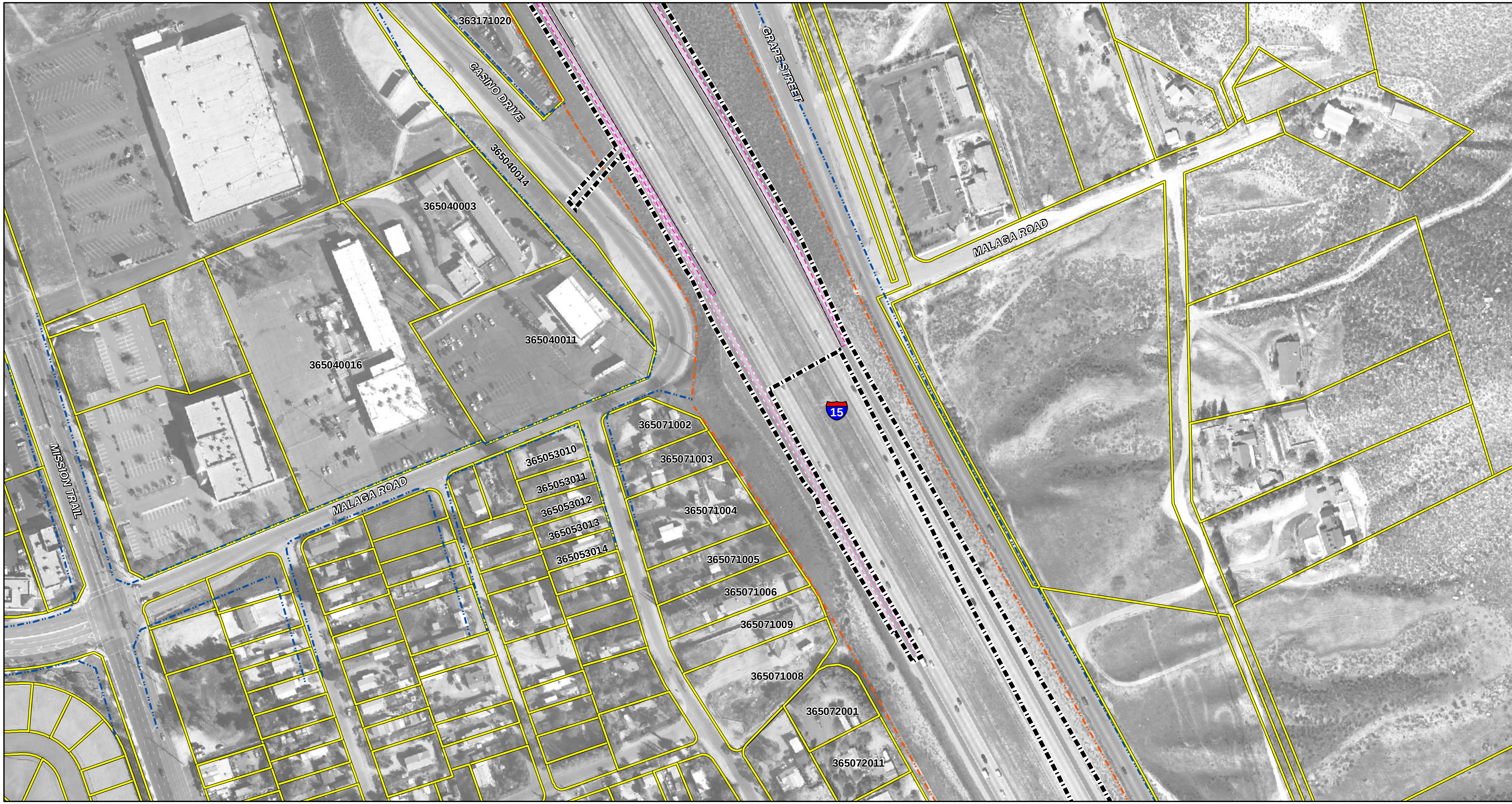
FIGURE 2.3.1
SHEET 9 OF 11

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Property Acquisitions Map for Alternatives 2 and 3

I:\SAE1401\Reports\IS_EA\fig2-3-1_Prop_Aquisitions_Mapbook_Alts2-3.mxd (11/15/2016)

This page intentionally left blank



N

0 100 200

FEET

SOURCE: Google Earth, 2013; SC Engineering, 2014; Riverside County Parcel Data, 2014.

- Project Footprint
- Proposed ROW, Alternative 2
- Proposed ROW, Alternative 2 & 3
- Proposed ROW, Alternative 3
- Proposed ROW, Franklin
- Existing CalTrans ROW
- Existing Local ROW
- Proposed Temporary Construction Easement
- Alt 3 Pavement Edges
- Franklin Pavement Edges
- Freeway Pavement Edges
- Temporary Road
- Alt 2 Pavement Edges
- Alt 2 Alignment
- Soundwalls
- Parcel Boundaries

Impacted Parcels

- Access Control Only
- Full Acquisition
- Partial Acquisition
- Partial/Full - Alt 3 Only
- Partial Acquisition with Temporary Construction Easement
- Temporary Construction Easement

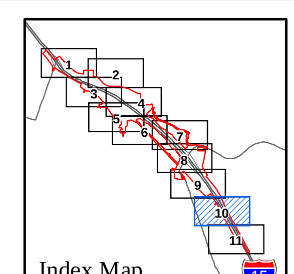


FIGURE 2.3.1
SHEET 10 OF 11

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Property Acquisitions Map for Alternatives 2 and 3

I:\SAE1401\Reports\IS_EA\fig2-3-1_Prop_Aquisitions_Mapbook_Alts2-3.mxd (11/15/2016)

This page intentionally left blank

N
0 100 200
FEET

SOURCE: Google Earth, 2013; SC Engineering, 2014; Riverside County Parcel Data, 2014.

- Project Footprint
- Proposed ROW, Alternative 2
- Proposed ROW, Alternative 2 & 3
- Proposed ROW, Alternative 3
- Proposed ROW, Franklin
- Existing CalTrans ROW
- Existing Local ROW
- Proposed Temporary Construction Easement
- Alt 3 Pavement Edges
- Franklin Pavement Edges
- Freeway Pavement Edges
- Temporary Road
- Alt 2 Pavement Edges
- Alt 2 Alignment
- Soundwalls
- Parcel Boundaries

Impacted Parcels

- Access Control Only
- Full Acquisition
- Partial Acquisition
- Partial/Full - Alt 3 Only
- Partial Acquisition with Temporary Construction Easement
- Temporary Construction Easement

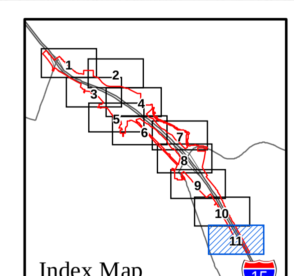


FIGURE 2.3.1
SHEET 11 OF 11

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Property Acquisitions Map for Alternatives 2 and 3

I:\SAE1401\Reports\IS_EA\fig2-3-1_Prop_Aquisitions_Mapbook_Alts2-3.mxd (11/15/2016)

This page intentionally left blank

2.4 Relocation and Property Acquisition

2.4.1 Regulatory Setting

Caltrans Relocation Assistance Program (RAP) is based on the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (as amended) and Title 49 Code of Federal Regulations (CFR) Part 24. The purpose of RAP is to ensure that persons displaced as a result of a transportation project are treated fairly, consistently, and equitably so that such persons would not suffer disproportionate injuries as a result of projects designed for the benefit of the public as a whole. Please see Appendix D for a summary of the RAP.

All relocation services and benefits are administered without regard to race, color, national origin, or sex in compliance with Title VI of the Civil Rights Act (42 United States Code [USC] 2000d, et seq.). Please see Appendix C for a copy of Caltrans' Title VI Policy Statement.

2.4.2 Affected Environment

This section is based on the information regarding relocations and relocation impacts from the following reports prepared for this project:

- *Community Impact Assessment* (December 2010)
- *Supplemental Memorandum to the Final Community Impact Assessment* (January 2012)
- *Second Supplemental Memorandum to the Final Community Impact Assessment* (January 2015)
- *Third Supplemental Memorandum to the Final Community Impact Assessment* (February 2015)
- *Relocation Impact Memorandum* (RIM) (April 2010)
- *Relocation Impact Memorandum* (January 2015)

The study area for the assessment of relocation impacts includes the City of Lake Elsinore, Census Tract 427.15, Census Tract 430.01, Census Tract 430.06, and Census Tract 464.04. This study area was selected because it covers the entire segment of the project and includes areas likely to be considered for the relocation of displaced residential and nonresidential uses. Land uses in the project area include single-family and multifamily residential, commercial, industrial, and vacant land.

2.4.3 Environmental Consequences

2.4.3.1 Temporary Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

The No Build Alternative would require no temporary construction easements (TCEs) and therefore, would not result in temporary impacts related to relocations.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

As identified in Table 2.4.A, construction of Alternative 2 would require 75 TCEs in the vicinity of the Franklin Street interchange and none within the vicinity of the Railroad Canyon Road interchange, totaling an area of 491,203 square feet (sf). TCEs are temporary easements on which construction vehicle access and staging of construction materials would occur.

Table 2.4.A: Properties Impacted by Temporary Construction Easements

APN	Land Use	Alternative 2	Alternative 3	Alternative 4
I-15/Railroad Canyon Road Interchange				
363-130-044	McDonalds	--	--	391 sf
363-140-085	Commercial Parking	--	--	2,149 sf
363-140-088	Carl's Jr	--	--	194 sf
363-140-089	Retail Center	--	--	290 sf
363-140-090	In-n-Out	--	--	1,842 sf
363-140-091	Commercial Parking	--	--	1,484 sf
363-140-093	76 Service Station	--	--	580 sf
363-150-005	Veterinarian Hospital	--	--	782 sf
363-150-040	Walgreens	--	--	647 sf
363-171-003	Tire Shop	--	--	308 sf
363-171-004	Arco Service Station	--	--	1,553 sf
363-172-005	Mobil Service Station	--	--	1,203 sf
363-530-005	Landscape Area	--	--	605 sf
I-15/Franklin Street Interchange				
363-090-003	Vacant	8,210 sf	8,210 sf	8,210 sf
363-090-011	Vacant	37,230 sf	37,230 sf	37,230 sf
363-540-001	Vacant	23,550 sf	23,550 sf	23,550 sf
363-540-002	Vacant	31,201 sf	31,201 sf	31,201 sf
363-540-009	Vacant	1,360 sf	1,360 sf	1,360 sf
373-064-009	Vacant	1,940 sf	1,940 sf	1,940 sf
373-064-012	Vacant	1,090 sf	1,090 sf	1,090 sf
373-071-002	Vacant	4,760 sf	4,760 sf	4,760 sf
373-071-015	Vacant	235 sf	235 sf	235 sf
373-071-016	Vacant	2,495 sf	2,495 sf	2,495 sf
373-071-018	Vacant	33,500 sf	33,500 sf	33,500 sf
373-072-009	Vacant	1,190 sf	1,190 sf	1,190 sf
373-072-010	Vacant	1,125 sf	1,125 sf	1,125 sf
373-072-011	Vacant	2,840 sf	2,840 sf	2,840 sf
373-072-017	Vacant	2,980 sf	2,980 sf	2,980 sf
373-072-030	Vacant	3,690 sf	3,690 sf	3,690 sf
373-073-016	Vacant	1,475 sf	1,475 sf	1,475 sf
373-073-017	Vacant	1,175 sf	1,175 sf	1,175 sf
373-073-018	Vacant	580 sf	580 sf	580 sf
373-081-001	Vacant	2,915 sf	2,915 sf	2,915 sf
373-081-002	Vacant	580 sf	580 sf	580 sf
373-081-015	Vacant	3,232 sf	3,232 sf	3,232 sf
373-081-016	Vacant	1,434 sf	1,434 sf	1,434 sf
373-081-017	Vacant	1,644 sf	1,644 sf	1,644 sf
373-081-018	Vacant	2,270 sf	2,270 sf	2,270 sf
373-081-019	Vacant	2,756 sf	2,756 sf	2,756 sf
373-081-020	Vacant	2,978 sf	2,978 sf	2,978 sf
373-081-021	Vacant	3,341 sf	3,341 sf	3,341 sf
373-081-022	Vacant	3,715 sf	3,715 sf	3,715 sf
373-081-023	Vacant	4,090 sf	4,090 sf	4,090 sf
373-081-024	Vacant	5,160 sf	5,160 sf	5,160 sf
373-081-025	Vacant	3,870 sf	3,870 sf	3,870 sf
373-082-005	Vacant	830 sf	830 sf	830 sf
373-082-006	Vacant	791 sf	791 sf	791 sf
373-082-007	Vacant	752 sf	752 sf	752 sf
373-082-008	Vacant	713 sf	713 sf	713 sf
373-082-009	Vacant	673 sf	673 sf	673 sf
373-082-010	Vacant	634 sf	634 sf	634 sf
373-082-011	Vacant	559 sf	559 sf	559 sf
373-082-012	Vacant	524 sf	524 sf	524 sf
373-082-013	Vacant	584 sf	584 sf	584 sf
373-082-014	Vacant	590 sf	590 sf	590 sf

Table 2.4.A: Properties Impacted by Temporary Construction Easements

APN	Land Use	Alternative 2	Alternative 3	Alternative 4
373-082-015	Vacant	529 sf	529 sf	529 sf
373-082-017	Vacant	575 sf	575 sf	575 sf
373-082-018	Vacant	479 sf	479 sf	479 sf
373-082-019	Vacant	399 sf	399 sf	399 sf
373-082-020	Vacant	227 sf	227 sf	227 sf
373-082-021	Vacant	54 sf	54 sf	54 sf
373-082-022	Vacant	10 sf	10 sf	10 sf
373-082-053	Vacant	2,335 sf	2,335 sf	2,335 sf
373-082-055	Vacant	605 sf	605 sf	605 sf
373-082-056	Vacant	1,660 sf	1,660 sf	1,660 sf
373-082-057	Vacant	1,220 sf	1,220 sf	1,220 sf
373-083-018	Vacant	421 sf	421 sf	421 sf
373-083-019	Vacant	573 sf	573 sf	573 sf
373-083-020	Vacant	789 sf	789 sf	789 sf
373-083-021	Vacant	965 sf	965 sf	965 sf
377-260-005	Vacant	1,825 sf	1,825 sf	1,825 sf
377-320-005	Vacant	14,600 sf	14,600 sf	14,600 sf
377-320-006	Vacant	15,190 sf	15,190 sf	15,190 sf
377-320-007	Vacant	235 sf	235 sf	235 sf
377-330-005	Vacant	25,055 sf	25,055 sf	25,055 sf
377-330-006	Vacant	15,575 sf	15,575 sf	15,575 sf
377-330-007	Vacant	75,435 sf	75,435 sf	75,435 sf
377-330-010	Vacant	1,375 sf	1,375 sf	1,375 sf
377-340-007	Vacant	1,378 sf	1,378 sf	1,378 sf
377-340-009	Vacant	203 sf	203 sf	203 sf
377-340-010	Vacant	11,240 sf	11,240 sf	11,240 sf
377-340-011	Vacant	13,405 sf	13,405 sf	13,405 sf
377-340-014	Vacant	35,995 sf	35,995 sf	35,995 sf
377-340-015	Vacant	18,300 sf	18,300 sf	18,300 sf
377-340-018	Vacant	13,935 sf	13,935 sf	13,935 sf
377-340-019	Vacant	9,535 sf	9,535 sf	9,535 sf
377-340-020	Single-family Residential	6,245 sf	6,245 sf	6,245 sf
377-340-021	Vacant	15,575 sf	15,575 sf	15,575 sf

Source: Riverside County Parcel Data (December 2014).
-- = not applicable
APN = Assessor's Parcel Number
I-15 = Interstate
sf = square feet

After construction, TCEs would be restored to their original condition and returned to their original owners. TCEs would not require the relocation of residents, businesses, or employees and TCE parcel owners would be compensated for temporary use of their property during construction.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

As identified in Table 2.4.A, construction of Alternative 3 would require 75 TCEs in the vicinity of the Franklin Street interchange and none within the vicinity of the Railroad Canyon Road interchange, totaling an area of 491,203 sf. As noted above for Alternative 2, TCEs under Alternative 3 would not require the relocation of residents, businesses, or employees and TCE parcel owners would be compensated for temporary use of their property during construction.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

As identified in Table 2.4.A, construction of Alternative 4 would require 18 TCEs, totaling an area of 21,984 sf. These 18 TCEs are located in the vicinity of the Railroad Canyon Road interchange. Similar to Alternatives 2 and 3, Alternative 4 would require 75 TCEs in the vicinity of the Franklin Street interchange, totaling an area of 491,203 sf. As noted for Alternatives 2 and 3 above, TCEs under Alternative 4 would not require the relocation of residents, businesses, or employees and TCE parcel owners would be compensated for temporary use of their property during construction.

2.4.3.2 Permanent Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

The No Build Alternative would require no residential or commercial displacements or partial acquisitions. Therefore, the No Build Alternative would not result in permanent impacts related to relocations. However, under the No Build Alternative, there could be some reduction in the tax base if increased congestion and poor access discourage consumers from patronizing businesses in the project area.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

Implementation of Alternative 2 would result in the acquisition of privately owned property, which includes residential land uses. Table 2.4.B summarizes the anticipated partial and full acquisitions under Alternative 2.

Table 2.4.B: Summary of Property Acquisitions for Build Alternative 2

Permanent Acquisitions				Temporary Construction Easements	
Number of Full Parcels	**Total Square Footage**	**Number of Partial Parcels**	**Total Square Footage**	**Number of Parcels**	**Total Square Footage**
Total: 12 Residential: 12 Commercial: 0	184,276	Total: 57 Residential: 39 Commercial: 18	798,787	75	491,203

Source: Riverside County Parcel Data (December 2014).
Note: The construction of the I-15/Franklin Street interchange would occur under all Build Alternatives.
I-15 = Interstate 15

As identified in Table 2.4.B, Alternative 2 would require the partial acquisition of 57 parcels (39 residentially zoned parcels and 18 commercially zoned parcels), totaling 798,787 sf. Alternative 2 would also require the full acquisition of 12 residentially zoned parcels totaling 184,276 sf. Tables 2.4.C and 2.4.D provides a list of full and partial acquisitions, respectively, required for Alternative 2. Previously referenced Figure 2.3.1 illustrates these property acquisitions for Alternative 2. The full right-of-way acquisitions identified for the project are based on conceptual design. The actual right-of-way (full and partial acquisitions) for the project would be refined and defined during final design.

Table 2.4.C: Properties Impacted by Partial Acquisitions

APN	Land Use	Alternative 2	Alternative 3	Alternative 4
I-15/Railroad Canyon Road Interchange				
363-130-044	McDonalds	--	--	1,041 sf
363-140-085	Commercial Parking	--	--	2,852 sf
363-140-088	Carl's Jr.	1,760 sf	--	268 sf
363-140-089	Shopping Center	205 sf	--	642 sf
363-140-090	In N Out	1,410 sf	1,410 sf	4,592 sf
363-140-091	Commercial Parking	--	--	2,295 sf
363-140-093	76 Service Station	--	--	2,842 sf
363-150-005	Veterinarian Hospital	--	--	691 sf
363-150-040	Walgreens	--	--	908 sf
363-171-003	Tire Shop	--	--	724 sf
363-171-004	Arco Service Station	--	--	346 sf
363-171-008	Sizzlers	--	47,695 sf	--
363-171-010	Pizza Hut	--	20,410 sf	--
363-171-011	Parking Area	--	1,770 sf	--
363-171-012	Parking Area	--	3,615	
363-171-022	Shopping Area	--	3,190 sf	--
363-171-023	Rancho Physical Therapy	--	1,910 sf	--
363-171-024	Karate Studio	--	1,435 sf	--
363-172-005	Mobil Service Station	--	--	926 sf
I-15/Franklin Street Interchange				
363-090-003	Vacant	31,965 sf	31,965 sf	31,965 sf
363-090-011	Vacant	51,565 sf	51,565 sf	51,565 sf
363-540-001	Vacant	34,765 sf	34,765 sf	34,765 sf
363-540-002	Vacant	43,970 sf	43,970 sf	43,970 sf
363-540-008	Vacant	49,154 sf	49,154 sf	49,154 sf
363-540-009	Vacant	1,356 sf	1,356 sf	1,356 sf
373-061-020	Roadway – Franklin Street	1,894 sf	1,894 sf	1,894 sf
373-061-021	Roadway – Franklin Street	1,907 sf	1,907 sf	1,907 sf
373-061-022	Roadway – Franklin Street	3,678 sf	3,678 sf	3,678 sf
373-061-024	Roadway – Franklin Street	138 sf	138 sf	138 sf
373-061-025	Roadway – Franklin Street	961 sf	961 sf	961 sf
373-061-026	Roadway – Franklin Street	2,566 sf	2,566 sf	2,566 sf
373-064-009	Vacant	565 sf	565 sf	565 sf
373-071-002	Vacant	7,515 sf	7,515 sf	7,515 sf
373-071-013	Vacant	785 sf	785 sf	785 sf
373-071-014	Vacant	2,630 sf	2,630 sf	2,630 sf
373-071-015	Vacant	5,025 sf	5,025 sf	5,025 sf
373-071-016	Vacant	3,930 sf	3,930 sf	3,930 sf
373-071-018	Vacant	47,650 sf	47,650 sf	47,650 sf
373-072-009	Vacant	2,880 sf	2,880 sf	2,880 sf
373-072-010	Vacant	2,095 sf	2,095 sf	2,095 sf
373-072-011	Vacant	2,105 sf	2,105 sf	2,105 sf
373-072-022	Vacant	4,820 sf	4,820 sf	4,820 sf
373-072-030	Vacant	131,165 sf	131,165 sf	131,165 sf
373-073-009	Vacant	1,450 sf	1,450 sf	1,450 sf
373-073-010	Vacant	1,535 sf	1,535 sf	1,535 sf
373-073-011	Vacant	1,782 sf	1,782 sf	1,782 sf
373-073-012	Vacant	1,946 sf	1,946 sf	1,946 sf
373-081-025	Vacant	2,175 sf	2,175 sf	2,175 sf
373-082-053	Vacant	845 sf	845 sf	845 sf
373-082-054	Vacant	440 sf	440 sf	440 sf
373-082-055	Vacant	430 sf	430 sf	430 sf
373-082-056	Vacant	430 sf	430 sf	430 sf
373-082-057	Vacant	775 sf	775 sf	775 sf
377-320-005	Vacant	11,865 sf	11,865 sf	11,865 sf
377-320-006	Vacant	9,545 sf	9,545 sf	9,545 sf
377-330-005	Vacant	12,690 sf	12,690 sf	12,690 sf

Table 2.4.C: Properties Impacted by Partial Acquisitions

APN	Land Use	Alternative 2	Alternative 3	Alternative 4
377-330-006	Vacant	101,925 sf	101,925 sf	101,925 sf
377-330-007	Vacant	49,455 sf	49,455 sf	49,455 sf
377-330-010	Vacant	3,475 sf	3,475 sf	3,475 sf
377-340-007	Vacant	1,349 sf	1,349 sf	1,349 sf
377-340-009	Vacant	442 sf	442 sf	442 sf
377-340-010	Vacant	25,625 sf	25,625 sf	25,625 sf
377-340-011	Vacant	30,730 sf	30,730 sf	30,730 sf
377-340-014	Vacant	10,370 sf	10,370 sf	10,370 sf
377-340-015	Vacant	17,870 sf	17,870 sf	17,870 sf
377-340-018	Vacant	17,320 sf	17,320 sf	17,320 sf
377-340-019	Vacant	11,030 sf	11,030 sf	11,030 sf
377-340-020	Single-family Residential	11,880 sf	11,880 sf	11,880 sf
377-340-021	Vacant	15,350 sf	15,350 sf	15,350 sf

Source: Riverside County Parcel Data (December 2014).
-- = not applicable
APN = Assessor's Parcel Number
I-15 = Interstate 15
sf = square feet

Table 2.4.D: Properties Impacted by Full Acquisitions

APN	Land Use	Alternative 2	Alternative 3	Alternative 4
I-15/Railroad Canyon Road Interchange				
363-130-077	Caltrans			1,307 sf
363-150-002	Vacant	--	--	47 sf
363-150-004	Vacant	--	--	209 sf
363-150-025	Vacant	--	--	264 sf
363-171-012	Parking Area	--	3,615 sf	--
I-15/Franklin Street Interchange				
373-061-023	Roadway – Franklin Street	1,200 sf	1,200 sf	1,200 sf
373-072-012	Vacant	5,663 sf	5,663 sf	5,663 sf
373-072-013	Vacant	4,792 sf	4,792 sf	4,792 sf
373-072-014	Vacant	4,000 sf	4,000 sf	4,000 sf
373-072-015	Vacant	3,667 sf	3,667 sf	3,667 sf
373-072-016	Vacant	4,792 sf	4,792 sf	4,792 sf
373-072-021	Vacant	1,235 sf	1,235 sf	1,235 sf
373-072-029	Vacant	63,162 sf	63,162 sf	63,162 sf
373-073-020	Vacant	4,625 sf	4,625 sf	4,625 sf
377-320-008	Single-family Residential	57,064 sf	57,064 sf	57,064 sf
377-330-011	Vacant	33,541 sf	33,541 sf	33,541 sf
373-061-023	Roadway – Franklin Street	1,200 sf	1,200 sf	1,200 sf

Source: Riverside County Parcel Data (December 2014).
-- = not applicable
APN = Assessor's Parcel Number
I-15 = Interstate 15
sf = square feet

Alternative 2 would displace a single-family residence in the northwest quadrant of the planned I-15/Franklin Street interchange in the City. A total of 3–4 residents would be displaced as a result of the acquisition of this residential unit. Finding replacement dwellings in the City of Lake Elsinore for residents displaced by Alternative 2 would be dependent in part on the overall demand for housing in the Inland Empire. As identified in the *Relocation Impact Memorandum* (January 2015), there were approximately 699 homes for sale or rent in the City of Lake Elsinore as of December, 2014. It is not anticipated that temporary housing and/or Last Resort Housing would be required for the project; however, they would be used in the event that relocating displaced residents require those benefits. This has been incorporated as **Measure REL-1**.

Alternative 2 would not result in any business displacements. Therefore, no employees would be displaced under this alternative.

Implementation of Alternative 2 would result in the loss of parking spaces for area businesses. Under Build Alternative 2, a total of 15 parking spaces in the northwest quadrant (I-15/Railroad Canyon Road interchange) would be lost due to partial acquisitions of commercial properties. The City of Lake Elsinore requires one parking space for every 250 sf of gross floor area for areas utilized for commercial uses.[1] The area in which 15 parking spaces would be removed currently has two commercial buildings totaling approximately 10,600 sf in size. Based on City of Lake Elsinore parking standards, the shopping area is required to provide a minimum of 43 parking spaces.[2] The shopping center currently provides 90 parking spaces for patrons to use, which is in excess of minimum City requirements. The removal of 15 parking spaces would result in approximately 75 parking spaces available for the shopping center. The remaining parking spaces would still be in excess of the amount minimally required by the City. Based on the preliminary right-of-way for Alternative 2, it is anticipated that parking lot circulation would not be affected by implementation of this alternative. The removal of parking spaces would not result in blocking public access to the property and would not increase traffic congestion within the parking lot.

Construction of Alternative 2 would create secondary fiscal impacts as a result of the right-of-way acquisition and relocations. Alternative 2 would have an impact due to the removal of property from the local tax base. The acquisition of property for conversion to transportation uses would result in a loss of taxable property in the City.

Property taxes are levied on the assessed value of privately owned property. Property taxes for properties within the study area are collected by the County and apportioned to the City, with the amount levied being approximately 1 percent of the assessed property value. According to the Riverside County Office of the Treasurer-Tax Collector, approximately eight cents of every dollar in paid property taxes is distributed to the City as property tax revenue. The only parcels included in calculations for property tax loss are parcels to be fully acquired by the project. The amount of property tax paid by parcel was recorded based upon property taxes paid to the Riverside County Office of the Treasurer-Tax Collector in 2011. The potential property tax losses for Alternative 2 total $4,313.24, which represents 0.07 percent of Lake Elsinore’s total property tax revenue ($5,537,970).[3]

As previously stated, Alternative 2 would not require the acquisition of any businesses. Therefore, no loss of potential sales tax would occur.

Although Alternative 2 would result in the displacement of a residence, it would have positive effects because improved traffic operations may encourage businesses to relocate into the area. Property values in the project area would be expected to increase as a result of improved

1 City of Lake Elsinore Municipal Code. Chapter 17.148 Parking Requirements, revised August 24, 2010.

2 10,600 square feet of commercial uses * 1 parking space/250 square feet of commercial uses = 42.4 parking spaces required.

3 City of Lake Elsinore. FY 2013-2014. Adopted Operating Budget. Website: http://issuu.com/cityoflakeelsinore/docs/final_adopted_budget_13-14_web_redu (accessed March 3, 2015).

access, resulting in higher property tax yields. Business sales in the area would also be expected to improve due to improved access for customers, resulting in higher sales tax yields.

All property acquisitions and relocations would be handled in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act (Uniform Act) of 1970 (Public Law 91-646, 84 Stat. 1894).

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

Implementation of Alternative 3 would result in the acquisition of privately owned property, including residential and commercial land and buildings. Table 2.4.E summarizes the anticipated partial and full acquisitions under Alternative 3.

Table 2.4.E: Summary of Property Acquisitions for Build Alternative 3

Permanent Acquisitions				Temporary Construction Easements	
Number of Full Parcels	**Total Square Footage**	**Number of Partial Parcels**	**Total Square Footage**	**Number of Parcels**	**Total Square Footage**
Total: 13 Residential: 12 Commercial: 1	187,891	Total: 60 Residential: 39 Commercial: 21	873,232	75	491,203

Source: Riverside County Parcel Data (December 2014).
Note: The construction of the I-15/Franklin Street interchange would occur under all Build Alternatives.

As identified in Table 2.4.E, Alternative 3 would require the partial acquisition of 60 parcels (39 residential parcels and 21 commercial parcels), totaling 873,232 sf. Alternative 3 would also require the full acquisition of 13 parcels (12 residential parcels and 1 commercial parcel) totaling 187,891 sf. Previously referenced Figure 2.3.1 illustrates the property acquisitions required for Alternative 3. The full right-of-way acquisitions identified for this alternative are based on conceptual design. The actual right-of-way (full and partial acquisitions) for the project would be refined and defined during final design.

Similar to Alternative 2, Alternative 3 would displace a single-family residence in the northwest quadrant of the proposed I-15/Franklin Street interchange in the City. A total of 3–4 residents would be displaced as a result of the acquisition of this residential unit. Finding replacement dwellings in the City of Lake Elsinore for residents displaced by Alternative 3 would be dependent in part on the overall demand for housing in the Inland Empire. Adequate replacement properties are anticipated to exist for the project. As of December 2014, there were approximately 699 homes for sale or rent in the City of Lake Elsinore.

Based on existing market conditions, there currently is adequate replacement housing for the project in the City of Lake Elsinore. The estimated real estate values described above are for a specific period of time and cannot be guaranteed beyond those dates. The actual property acquisitions and subsequent relocations for the project may not occur for some time; therefore, values at the time of acquisition are subject to variance from those reported here.

It is possible that adequate relocation resources may not exist for the owners and/or tenants of the single-family residence in the project area at the time of the displacement. As a result, relocation opportunities in other cities in the County, such as Menifee, Murrieta, and Wildomar, may be used to relocate residents displaced by the project. It is not anticipated that temporary housing and/or Last Resort Housing would be required for the project; however, they would be used in the event that relocating displaced residents require those benefits. This has been incorporated as **Measure REL-1**.

In addition to the one residential displacement, Alternative 3 would result in two business displacements (two displacements on partial acquisitions). These displacements would be in the City of Lake Elsinore and would require the relocation of two existing businesses, a Pizza Hut (Assessor's Parcel Number [APN] 363-171-010) and a Sizzler (APN 363-171-008). The other structures and businesses on these parcels would not be displaced by the project. Based on current vacancy rates in the City of Lake Elsinore, it is anticipated that these displaced nonresidential uses can be relocated in the City or the immediately surrounding areas. As of December 2014, there were approximately 63 restaurant/fast food spaces/properties for lease or sale within the City of Lake Elsinore and the surrounding Cities of Menifee and Wildomar and the current commercial vacancy rate of 10.1 percent for the Inland. Relocation resources for all nonresidential uses are anticipated to be adequate in the relocation area. In addition, adjacent cities (e.g., Menifee and Wildomar) may be considered for relocations, if necessary. In the event that relocating displaced businesses requires relocation in a different City, **Measure REL-1** shall be implemented.

The relocation of these two businesses that would occur with implementation of Alternative 3 is anticipated to lead to a displacement of an estimated 40–98 employees. This displacement would represent 0.20–0.50 percent of the employed labor force in the City of Lake Elsinore, which is not considered to be substantial.

Property taxes are levied on the assessed value of privately owned property. Property taxes for properties within the study area are collected by the county and apportioned to the City, with the amount levied being approximately 1 percent of the assessed property value. According to the Riverside County Office of the Treasurer-Tax Collector, approximately eight cents of every dollar in paid property taxes is distributed to the City as property tax revenue. The only parcels included in calculations for property tax loss are parcels to be fully acquired by the project. The amount of property tax paid by parcel was recorded based upon property taxes paid to the Riverside County Office of the Treasurer-Tax Collector in 2011. The potential property tax losses for Alternative 3 total $4,273.30, which represents 0.07 percent of Lake Elsinore's total property tax revenue ($5,544,000).[1]

When businesses cease to operate, the State and local jurisdictions lose sales tax revenues. This analysis provides an estimate of the annual sales tax revenue losses to city, county, and state governments as a result of the nonresidential acquisitions that would occur from the project. The sales tax rate within the County and the City of Lake Elsinore is 8.0 percent, of which 1.0 percent is distributed to the local jurisdiction (City of Lake Elsinore). In the Taxable Sales in California (Sales and Use Tax) Report, the State Board tabulates sales tax revenues by business and jurisdictions on a quarterly basis. Due to privacy laws, the Board does not disclose sales tax revenues generated by individual businesses. The taxable sales for the businesses to be impacted by the project could not be obtained. The potential loss in sales tax revenue was estimated using total taxable sales within the County and the City of Lake Elsinore.

[1] City of Lake Elsinore. *FY 2013-2014. Adopted Operating Budget.* Website: http://issuu.com/cityoflakeelsinore/docs/final_adopted_budget_13-14_web_redu (accessed March 3, 2015).

The acquisitions associated with Alternative 3 would cause two sales tax-generating businesses to be relocated (Pizza Hut and Sizzler). In the event that all businesses from the City relocate within the same City boundary, there would be no loss of sales tax revenue to each city. However, relocation outside a particular city would result in a net loss of sales tax revenue to that city. The potential annual sales tax revenue loss for Alternative 3 is shown in Table 2.4.F.

Table 2.4.F: Potential Annual Sales Tax Revenue Loss for Alternative 3

Jurisdiction	Tax Rate	Taxable Sales	Total Sales Tax Revenue	Business Permits	Average Sales Tax/Business
City of Lake Elsinore	1.00%	$20,100,196	$203,545	2	$13,026
Riverside County	0.50%	$20,100,196	$109,157	–	$6,563
State of California	6.25%	$20,100,196	$1,256,262	–	$78,516

Source: California State Board of Equalization and the City of Lake Elsinore (2011).

Implementation of Alternative 3 would also result in the loss of parking spaces for area businesses. Under Build Alternative 3, a total of 63 parking spaces would be lost in the southwest quadrant of the I-15/Railroad Canyon Road interchange due to partial acquisitions of commercial properties. As previously stated, the City of Lake Elsinore requires one parking space for every 250 sf of gross floor area for areas utilized for commercial uses.[1] The area in which 63 parking spaces would be removed currently has five commercial buildings totaling approximately 42,420 sf in size. Based on City of Lake Elsinore parking standards, the shopping area should have a minimum of 170 parking spaces available.[2] The shopping center currently provides approximately 392 parking spaces for patrons to use, which is in excess of minimum City requirements. The removal of 63 parking spaces would result in approximately 329 parking spaces available for the shopping center. The remaining parking spaces would still be in excess of the amount minimally required by the City.

Although businesses in the southwest quadrant would lose 75 on-site parking spaces, the majority of these spaces are associated with the two businesses that would require relocation. Although there would be a loss of parking spaces, as stated above, it is not expected that the loss would result in a parking space deficiency because the parking that would be lost currently is dedicated to Sizzler and Pizza Hut patrons. Other businesses in the area have existing dedicated parking and are unlikely to be using the parking allotted for the Sizzler and Pizza Hut.

Based on the preliminary right-of-way proposed for Alternative 3, it is anticipated that parking lot circulation would not be affected by implementation of this alternative. The removal of parking spaces would not result in blocking public access to the property and would not increase traffic congestion within the parking lot.

Implementation of Alternative 3 would create secondary fiscal impacts as a result of the right-of-way acquisition and relocations due to the removal of property from the local tax base. The acquisition of property for conversion to transportation uses would result in a loss of taxable property in the City of Lake Elsinore; however, this would be minimal compared to the City's total tax assessment base.

---

1 City of Lake Elsinore Municipal Code. 2010. Chapter 17.148 Parking Requirements (revised August 24, 2010).

2 42,420 square feet of commercial uses * 1 parking space/250 square feet of commercial uses = 169.6 parking spaces required.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

Implementation of Alternative 4 would result in the acquisition of privately owned property, including residential and commercial land and buildings. Table 2.4.G summarizes the anticipated partial and full acquisitions under Alternative 4. As identified in Table 2.4.G, Alternative 4 would require the partial acquisition of 64 parcels, totaling 815,431 sf. Alternative 4 would also require the full acquisition of 16 parcels (1 residential parcel and 14 vacant parcels) totaling 174,199 sf. Previously referenced Figure 2.3.2 illustrates the property acquisitions required for Alternative 4. The full right-of-way acquisitions identified for this alternative are based on conceptual design. The actual right-of-way (full and partial acquisitions) for the project would be refined and defined during final design.

Table 2.4.G: Summary of Property Acquisitions for Build Alternative 4

Permanent Acquisitions				Temporary Construction Easements	
Number of Full Parcels	**Total Square Footage/Square Meters**	**Number of Partial Parcels**	**Total Square Footage/Square Meters**	**Number of Parcels**	**Total Square Footage/Square Meters**
Total: 13 Residential: 1 Commercial: 0 Vacant Land:11 Caltrans: 1	174,199	Total: 64 Residential: 1 Commercial: 12 Vacant Land: 43 Landscaped Area: 1 Roadway:7	815,431	Total: 18 Residential: 0 Commercial: 16 Vacant Land: 2	21,984

Source: Riverside County Parcel Data (December 2014).
Note: The construction of I-15/Franklin Street interchange would occur under all Build Alternatives.
I-15 = Interstate 15

Similar to Alternative 2, Alternative 4 would displace a single-family residence in the northwest quadrant of the proposed I-15/Franklin Street interchange in the City. A total of 3–4 residents would be displaced as a result of the acquisition of this residential unit. Finding replacement dwellings in the City of Lake Elsinore for residents displaced by Alternative 4 would be dependent in part on the overall demand for housing in the Inland Empire. Adequate replacement properties are anticipated to exist for the project. As of December 2014, there were approximately 699 homes for sale or rent in the City of Lake Elsinore.

Based on existing market conditions, there currently is adequate replacement housing for the project in the City of Lake Elsinore. The estimated real estate values described above are for a specific period of time and cannot be guaranteed beyond those dates. The actual property acquisitions and subsequent relocations for the project may not occur for some time; therefore, values at the time of acquisition are subject to variance from those reported here.

It is possible that adequate relocation resources may not exist for the owners and/or tenants of the single-family residence in the project area at the time of the displacement. As a result, relocation opportunities in other cities in the County, such as Menifee, Murrieta, and Wildomar, may be used to relocate residents displaced by the project. It is not anticipated that temporary housing and/or Last Resort Housing would be required for the project; however, they would be used in the event that relocating displaced residents require those benefits. This has been incorporated as **Measure REL-1**.

Alternative 4 would not result in any business displacements. Therefore, no employees would be displaced under this alternative.

Implementation of Alternative 4 would result in the loss of parking spaces for area businesses. Under Build Alternative 4, a total of 3 parking spaces in the northwest quadrant (I-15/Railroad Canyon Road interchange) would be lost due to partial acquisitions of commercial properties. The City of Lake Elsinore requires one parking space for every 250 sf of gross floor area for areas utilized for commercial uses.[1] The area in which 3 parking spaces would be removed currently has two commercial buildings totaling approximately 10,600 sf in size. Based on City of Lake Elsinore parking standards, the shopping area is required to provide a minimum of 43 parking spaces.[2] The shopping center currently provides 90 parking spaces for patrons to use, which is in excess of minimum City requirements. The removal of 3 parking spaces would result in approximately 87 parking spaces available for the shopping center. The remaining parking spaces would still be in excess of the amount minimally required by the City. Based on the preliminary right-of-way proposed for Alternative 4, it is anticipated that parking lot circulation would not be affected by implementation of this alternative. The removal of parking spaces would not result in blocking public access to the property and would not increase traffic congestion within the parking lot.

Construction of Alternative 4 would create secondary fiscal impacts as a result of the right-of-way acquisition and relocations. Alternative 4 would have an impact due to the removal of property from the local tax base. The acquisition of property for conversion to transportation uses would result in a loss of taxable property in the City.

Property taxes are levied on the assessed value of privately owned property. Property taxes for properties within the study area are collected by the County and apportioned to the City, with the amount levied being approximately 1 percent of the assessed property value. According to the Riverside County Office of the Treasurer-Tax Collector, approximately eight cents of every dollar in paid property taxes is distributed to the City as property tax revenue. The only parcels included in calculations for property tax loss are parcels to be fully acquired by the project. The amount of property tax paid by parcel was recorded based upon property taxes paid to the Riverside County Office of the Treasurer-Tax Collector in 2011. The potential property tax losses for Alternative 4 total $4,313.24, which represents 0.07 percent of Lake Elsinore's total property tax revenue ($5,537,970).[3]

As previously stated, Alternative 4 would not require the acquisition of any businesses. Therefore, no loss of potential sales tax would occur.

Although Alternative 4 would result in the displacement of a residence, it would have positive effects because improved traffic operations may encourage businesses to relocate into the area. Property values in the project area would be expected to increase as a result of improved access, resulting in higher property tax yields. Business sales in the area would also be expected to improve due to improved access for customers, resulting in higher sales tax yields.

All property acquisitions and relocations would be handled in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act (Uniform Act) of 1970 (Public Law 91-646, 84 Stat. 1894).

---

1 City of Lake Elsinore Municipal Code. 2010. Chapter 17.148 Parking Requirements, revised August 24, 2010.

2 10,600 square feet of commercial uses * 1 parking space/250 square feet of commercial uses = 42.4 parking spaces required.

3 City of Lake Elsinore. FY 2013-2014. Adopted Operating Budget. Website: http://issuu.com/cityoflakeelsinore/docs/final_adopted_budget_13-14_web_redu (accessed March 3, 2015).

CEQA DISCUSSION

Would the project:

XIII. b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?

Less Than Significant Impact. Implementation of the project would require the relocation of one existing residence. As identified in the Relocation Impact Memorandum,[1] based on the current availability of 699 residences for rent or sale within the City, there will be sufficient residential resources for rent or purchase if the residence is required to relocate as a result of the project. To ensure that the displacement of this residence is minimized, **Minimization Measure REL-1**, a standard condition presented below in Section 2.4.4, has been identified. Adherence to **Minimization REL-1** would ensure impacts remain less than significant.

XIII. c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?

Less Than Significant Impact. Please refer to CEQA Response a) above.

2.4.4 Avoidance, Minimization, and/or Mitigation Measures

Based on current vacancy rates in the City of Lake Elsinore, it is anticipated that the displaced nonresidential and residential uses can be relocated within the City or the immediately surrounding areas. It is not anticipated that the statutory limits for the Last Resort Housing Program would be exceeded for the one residence that would be displaced; however, the Last Resort Housing Program would be used if required. The following measure would be implemented under any of the Build Alternatives:

Minimization Measure

REL-1 The City of Lake Elsinore shall comply with the provisions of the Uniform Relocation Assistance and Real Property Acquisitions Policies Act (Uniform Act) of 1970 and the 1987 Amendments as implemented by the Uniform Relocation Assistance and Real Property Acquisition Regulations for Federal and Federally Assisted Programs adopted by the United States Department of Transportation (March 2, 1989).

[1] LSA Associates, Inc. 2015. *Relocation Impact Memorandum for I-15/Railroad Canyon Road Interchange Project*. January.

This page intentionally left blank

2.5 Environmental Justice

2.5.1 Regulatory Setting

All projects involving a federal action (funding, permit, or land) must comply with Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,* signed by President William J. Clinton on February 11, 1994. This EO directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. Low income is defined based on Caltrans' use of the U.S. Department of Health and Human Services poverty guidelines. For 2015, this was $24,250 for a family of four.

All considerations under Title VI of the Civil Rights Act of 1964 and related statutes have also been included in this project. Caltrans' commitment to upholding the mandates of Title VI is evidenced by its Title VI Policy Statement, signed by the Director, which can be found in Appendix C of this document.

2.5.2 Affected Environment

This section is based on the information from the following documents prepared for the project:

- *Community Impact Assessment* (December 2010)
- *Supplemental Memorandum to the Final Community Impact Assessment* (January 2012)
- *Second Supplemental Memorandum to the Final Community Impact Assessment* (January 2015)
- *Third Supplemental Memorandum to the Final Community Impact Assessment* (February 2015)

The following were utilized in the evaluation of potential environmental justice impacts:

- Percentage of Non-White residents in the project area census tracts;
- Percentage of Hispanic residents (the United States Census Bureau considers Hispanic or Latino ethnicity distinct from racial background) in the project area census tracts;
- Percentage of population below the poverty level in the project area census tracts; and
- Median household income in the project area census tracts.

Table 2.5.A summarizes the percentage of minority and below-poverty-level populations, and the median household income found in the study area census tracts and the City of Lake Elsinore.

As identified in Table 2.5.A, the Non-White population comprises approximately 34 and 38 percent of the population in Census Tract 430.01 and 430.06. For Census Tracts 427.15 and 464.04, the Non-White population comprises approximately 32 and 31 percent of the total population. Census Tracts 430.01 and 430.06 have a higher percentage of Hispanic residents than the City of Lake Elsinore (48 percent), while Census Tracts 427.15 and 464.04 have a lower percentage of Hispanic residents than the City.

Table 2.5.A: Environmental Justice Populations

Census Tract	Non-White (not including Hispanic)	Hispanic	Percentage Below Poverty	Median Household Income
Census Tract 427.15	31.6%	35.8%	6.9%	$83,600
Census Tract 430.01	33.5%	60.1%	24.0%	$35,926
Census Tract 430.06	38.3%	63.0%	24.8%	$40,360
Census Tract 464.04	31.3%	42.2%	19.0%	$61,504
City of Lake Elsinore	33.9%	48.4%	13.2%	$62,436
County of Riverside	34.3%	45.5%	15.6%	$57,096

Source: United States Census Bureau. 2010. *Table B25046-Aggregate Number of Vehicles Available by Tenure, Table B19013-Median Household Income in the Past 12 Months, Table S1701 Poverty Status in the Past 12 Months*, 2008–2012 American Community Survey 5-Year Estimates, Census 2010.

Census Tract 427.15 has a substantially higher median household income above the City of Lake Elsinore average of $62,436 while the remaining three census tracts (Census Tracts 430.01, 430.06, and 464.04) have lower-than-average median household incomes compared to the City of Lake Elsinore average. Similarly, Census Tract 427.15 has a lower percentage of persons below poverty than the reference population of the City of Lake Elsinore (13.2 percent), while the other three study area census tracts have a higher percentage of people below the poverty level than the reference population of the City.

2.5.3 Environmental Consequences

2.5.3.1 Temporary Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

The No Build Alternative would not result in property acquisition, community disruption, or other changes that could adversely affect environmental justice populations.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

Alternative 2 would result in short-term construction-related air quality, noise, and traffic impacts to all residents in the study area census tracts. However, these impacts would not be predominantly borne by these minority or low-income populations, and the project-related construction impacts would not be appreciably more severe to these minority or low-income populations compared to other populations in the City.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

Similar to Alternative 2, Alternative 3 would result in short-term construction-related air quality, noise, and traffic impacts to all residents in the study area census tracts. However, these impacts would not be predominantly borne by these minority or low-income populations, and the project-related construction impacts would not be appreciably more severe to these minority or low-income populations compared to other populations in the City.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

Similar to Alternatives 2 and 3, Alternative 4 would result in short-term construction-related air quality, noise, and traffic impacts to all residents in the study area census tracts. However, these impacts would not be predominantly borne by these minority or low-income populations, and the project-related construction impacts would not be appreciably more severe to these minority or low-income populations compared to other populations in the City.

2.5.3.2 Permanent Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

The No Build Alternative would not result in property acquisition, community disruption, or other changes that could adversely affect environmental justice populations.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

Implementation of Alternative 2 would provide beneficial impacts to the area. Residents displaced as a result of the single residential parcel acquisition required for construction of the planned improvements at the I-15/Franklin Street interchange are expected to be relocated to other sites in the surrounding community. None of the study area census tracts were determined to have a disproportionate number of environmental justice populations compared to the rest of the City.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

Implementation of Alternative 3 would provide beneficial impacts to the area. Impacts for Alternative 3 would be the same as those identified for Alternative 2. Residents displaced as a result of the single residential parcel acquisition required for construction of the proposed improvements at the I-15/Franklin Street interchange are expected to be relocated to other sites in the surrounding community. None of the study area census tracts were determined to have a disproportionate number of environmental justice populations compared to the rest of the City.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

Implementation of Alternative 4 would provide beneficial impacts to the area. Impacts for Alternative 4 would be the same as those identified for Alternative 2 and Alternative 3. Residents displaced as a result of the single residential parcel acquisition required for construction of the proposed improvements at the I-15/Franklin Street interchange are expected to be relocated to other sites in the surrounding community. None of the study area census tracts were determined to have a disproportionate number of environmental justice populations compared to the rest of the City.

2.5.4 Avoidance, Minimization, and/or Mitigation Measures

Based on the above discussion and analysis, Alternatives 1, 2, 3, and 4 would not cause disproportionately high or adverse effects on any minority or low-income populations as per EO 12898 regarding environmental justice.

This page intentionally left blank

2.6 Utilities and Emergency Services

2.6.1 Affected Environment

This section is based on a review of existing utility and service providers and facilities within and immediately adjacent to the project disturbance limits.

2.6.1.1 Utilities

Water and sewer services in the vicinity of the project intersection are provided by the Elsinore Valley Municipal Water District. The Southern California Gas Company provides natural gas while Southern California Edison provides electricity. Cable and telecommunication services are provided by both Verizon and Time Warner Cable. Utilities provided in the project area are summarized in Table 2.6.A.

Table 2.6.A: Utility Service Providers

Utility Category	Utility Provider
Water	Elsinore Valley Municipal Water District
Sewer	Elsinore Valley Municipal Water District
Gas	Southern California Gas Company (The Gas Company)
Electricity	Southern California Edison
Telecommunications	Verizon
	Time Warner Cable

2.6.1.2 Fire Protection

The City of Lake Elsinore contracts for fire services from the Riverside County Fire Department (RCFD) and the California Department of Forestry and Fire Protection (CalFire). The RCFD operates 93 fire stations in 17 battalions, providing fire suppression, emergency medical, rescue, and fire prevention services. The City is served by Battalion 2 in the Southwest Division of RCFD. The Southwest Division encompasses the southwestern portion of Riverside County and contains 19 permanently staffed stations and two all-volunteer stations.

Battalion 2 contains seven permanently staffed stations (Elsinore Fire Station No. 10, Lakeland Village Fire Station No. 11, El Cariso Fire Station No. 51, Wildomar Fire Station No. 61, McVicker Park Fire Station No. 85, Canyon Hills Fire Station No. 94, and Rosetta Canyon Fire Station No. 97) and two all-volunteer stations (Rancho Carrillo Fire Station No. 62 and Rancho Capistrano Fire Station No. 74).

Of these stations, four permanently staffed stations (Elsinore Fire Station No. 10, McVicker Park Fire Station No. 85, Canyon Hills Fire Station No. 94, and Rosetta Canyon Station No. 97) are located within the City limits.

Both RCFD and CalFire respond to all types of emergencies, depending on the need and equipment available. Emergencies range from wildland fires, residential/commercial structure fires, automobile accidents, medical aid, search and rescue missions, hazardous materials spills, floods, and earthquakes. The nearest fire station to the project study area is Canyon Hills Fire Station No. 94, located approximately 1.6 miles east of the project study area.

2.6.1.3 Law Enforcement

The City of Lake Elsinore contracts for police protection from Riverside County Sheriff's Department (RCSD). The Lake Elsinore Police Department/Sheriff's Station is located on the northeast edge of the lake at 333 W. Limited Avenue, approximately 1.2 miles southwest of the project study area. The California Highway Patrol (CHP) has jurisdiction on freeways in the State of California, including Interstate 15 (I-15). The nearest CHP area office is in Temecula at 27685 Commerce Center Drive, approximately 11 miles southeast of the project study area.

2.6.1.4 Hospitals

There are no hospitals within 5 miles of the project area. The nearest hospital to the project area is Inland Valley Medical Center, (36485 Inland Valley Drive, Wildomar) approximately 7 miles southwest of the project area.

2.6.2 Environmental Consequences

2.6.2.1 Temporary Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

The No Build Alternative would not involve construction activities; therefore, no temporary impact to utilities or emergency services would occur.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

Implementation of Alternative 2 would require protection in place, removal, replacement, or relocation of existing utility facilities within the project disturbance limits. An updated utility search and potholing, as specified below in **Measures UES-1** through **UES-3**, would be required during final design to determine all utility conflicts that require positive location and/or relocation prior to and during project construction.

The utility facilities that have the potential to be affected by project construction are listed in Table 2.6.B.

During construction, some impairment to the delivery of services, including fire and police response times, may occur. These temporary impacts would be substantially minimized through the implementation of a Transportation Management Plan (TMP) as identified in Section 2.7. Additionally, measures to minimize the risk of fires during construction would be implemented, as specified below in **Measure UES-4**.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

Implementation of Alternative 3 would require protection in place, removal, replacement, or relocation of existing utility facilities within the project disturbance limits. An updated utility search and potholing, as specified below in **Measures UES-1** through **UES-3**, would be required during final design to determine all utility conflicts that require positive location and/or relocation prior to and during project construction. The utility facilities that have the potential to be impacted by project construction under this alternative are listed in previously referenced Table 2.6.B.

During construction, some impairment to the delivery of services, including fire and police response times, may occur. However, these temporary impacts would be substantially minimized through the implementation of a TMP. Additionally, measures to minimize the risk of fires during construction would be implemented, as specified below in **Measure UES-4**.

Table 2.6.B: Potential Utility Conflicts During Project Construction

Utility Category	Utility Provider	Description	Location	Conflict Resolution		
				Alternative 2	Alternative 3	Alternative 4
Water	Elsinore Valley Municipal District	Water Line Underground	Grape Street	Protect in Place	Protect in Place	Protect in Place
		2 Water Lines Underground	Railroad Canyon Road	Protect in Place	Protect in Place	Protect in Place
		Water Line Underground	Casino Drive	No Construction Work – No Impact	Relocate Fire Hydrant	No Construction Work – No Impact
		Water Line Underground	Franklin Street	Relocate 1,200 feet of 54-inch Water Line	Relocate 1,200 feet of 54-inch Water Line	Relocate 1,200 feet of 54-inch Water Line
		Water Line Underground	Camino Del Norte	Protect in Place	Protect in Place	Protect in Place
		Water Line Underground	Various I-15 Crossings	Protect in Place	Protect in Place	Protect in Place
Sewer	Elsinore Valley Municipal Water District	Sewer Line Underground	Grape Street	Protect in Place	Protect in Place	Protect in Place
		Sewer Line Underground	Casino Drive	No Construction Work – No Impact	Protect in Place	No Construction Work – No Impact
		Sewer Line Underground	Franklin Street	Relocate 1,200 feet of 30-inch Sewer Line	Relocate 1,200 feet of 30-inch Sewer Line	Relocate 1,200 feet of 30-inch Sewer Line
		Sewer Line Underground	Various I-15 Crossings	Protect in Place	Protect in Place	Protect in Place
Gas	Southern California Gas Company	Gas Line Underground	Grape Street	Protect in Place	Protect in Place	Protect in Place
		2 Gas Lines Underground	Railroad Canyon Road	Protect in Place	Protect in Place	Protect in Place
		Gas Line Underground	Main Street	Protect in Place	Protect in Place	Protect in Place
		Gas Line Underground	Camino Del Norte	Protect in Place	Protect in Place	Protect in Place
		Gas Line Underground	Casino Drive	No Construction Work – No Impact	Protect in Place	No Construction Work – No Impact

Table 2.6.B: Potential Utility Conflicts During Project Construction

Utility Category	Utility Provider	Description	Location	Conflict Resolution		
				Alternative 2	Alternative 3	Alternative 4
Electricity	Southern California Edison	Electrical Overhead Line	Casino Drive	No Construction Work – No Impact	Relocate 1 power and vaults	No Construction Work – No Impact
		Electrical Overhead Line	Franklin Street	Relocate 9 power poles and vaults	Relocate 9 power poles and vaults	Relocate 9 power poles and vaults
		Electrical Underground Line	Franklin Street	Relocate 910 feet of conduit	Relocate 910 feet of conduit	Relocate 910 feet of conduit
		Electrical Underground Line	Main Street	Protect in Place	Protect in Place	Protect in Place
		Electrical Overhead Line	Camino Del Norte	Protect in Place	Protect in Place	Protect in Place
		Electrical Overhead Line	Various I-15 Crossings	Protect in Place	Protect in Place	Protect in Place
Telecommunications	Verizon	Telephone/Fiber Underground Line	Grape Street	Protect in Place	Protect in Place	Protect in Place
		Telephone Underground Line	Railroad Canyon Road	Protect in Place	Protect in Place	Protect in Place
		Fiber Optic Underground Line	Railroad Canyon Road	Protect in Place	Protect in Place	Protect in Place
		Telephone Underground Line	Casino Drive	No Construction Work – No Impact	Protect in Place	No Construction Work – No Impact
		Fiber Optic Underground Line	Casino Drive	No Construction Work – No Impact	Relocate	No Construction Work – No Impact
		Cellular Tower	Franklin Street	Relocate Cellular Tower	Relocate Cellular Tower	Relocate Cellular Tower
		Telephone Underground Line	Main Street	Protect in Place	Protect in Place	Protect in Place
		Telephone Underground Line	Camino Del Norte	Protect in Place	Protect in Place	Protect in Place

Source: SC Engineering (June 2015).
Note: It is anticipated that no Time Warner Cable facilities would be in conflict with the project.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

Implementation of Alternative 4 would require protection in place, removal, replacement, or relocation of existing utility facilities within the project disturbance limits. An updated utility search and potholing, as specified below in **Measures UES-1** through **UES-3**, would be required during final design to determine all utility conflicts that require positive location and/or relocation prior to and during project construction. The utility facilities that have the potential to be impacted by project construction under this alternative are listed in previously referenced Table 2.6.B.

During construction, some impairment to the delivery of services, including fire and police response times, may occur. However, these temporary impacts would be substantially minimized through the implementation of a TMP. Additionally, measures to minimize the risk of fires during construction would be implemented, as specified below in **Measure UES-4**.

2.6.2.2 Permanent Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

The No Build Alternative would not result in relocations of utilities; therefore, no permanent utility impacts would occur.

The No Build Alternative would not improve local circulation or access within the City and surrounding communities. In addition, no improvements would be constructed that would improve access for emergency service vehicles, including fire and police. Therefore, continuous congestion under this alternative has the potential to reduce response times of emergency services that utilize the I-15/Railroad Canyon Road interchange and local roads.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

Any relocation of utilities as a result of the implementation of Alternative 2 would occur during the final design or construction phase, such that all utility services are permanently maintained.

Additionally, in the event that undergrounding of existing utilities is proposed, the underground of such utilities would be coordinated and decided upon with the utility companies during the final design phase. If resolution of the location of utilities during final design involves changes to the project footprint, an Environmental Re-Evaluation will be performed, addressing applicable requirements. Because the project is a highway improvement project, it would not result in a substantive increase in the need for domestic water services, wastewater facilities, or solid waste disposal.

The project would reduce congestion in the interchange area as identified in Section 1.2.2. In addition, the improvements would enhance access for emergency service vehicles, including fire and police vehicles. Therefore, the implementation of Alternative 2 would improve the response times of emergency services that utilize the I-15/Railroad Canyon Road interchange and local roads, including Franklin Street, compared to the No Build Alternative.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

Any relocation of utilities as a result of Alternative 3 would occur during the final design or construction phase, such that all utility services are permanently maintained. Additionally, proposed undergrounding of existing utilities would be coordinated and decided upon with the utility companies during the final design phase. If resolution of the location of utilities during final design involves changes to the project footprint, an Environmental Re-Evaluation will be performed, addressing applicable requirements. Because the project is a highway improvement project, it would not result in a substantive increase in the need for domestic water services, wastewater facilities, or solid waste disposal.

The project would reduce congestion in the interchange area as identified in Section 1.2.2. In addition, the improvements would enhance access for emergency service vehicles, including fire and police vehicles. Therefore, Alternative 3 would improve the response times of emergency services that utilize the I-15/Railroad Canyon Road interchange, the I-15/Franklin Street interchange, and local roads, compared to the No Build Alternative.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

Any relocation of utilities as a result of Alternative 4 would occur during the final design or construction phase, such that all utility services are permanently maintained. Additionally, proposed undergrounding of existing utilities would be coordinated and decided upon with the utility companies during the final design phase. If resolution of the location of utilities during final design involves changes to the project footprint, an Environmental Re-Evaluation will be performed, addressing applicable requirements. Because the project is a highway improvement project, it would not result in a substantive increase in the need for domestic water services, wastewater facilities, or solid waste disposal.

The project would reduce congestion in the interchange area as identified in Section 1.2.2. In addition, the improvements would enhance access for emergency service vehicles, including fire and police vehicles. Therefore, Alternative 4 would improve the response times of emergency services that utilize the I-15/Railroad Canyon Road interchange, the I-15/Franklin Street interchange, and local roads, compared to the No Build Alternative.

CEQA DISCUSSION

XIV. a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:

Fire protection?

Less Than Significant Impact. The City of Lake Elsinore contracts for fire services with the RCFD and CalFire. The RCFD operates 93 fire stations in 17 battalions, providing fire suppression, emergency medical, rescue, and fire prevention services. The City is served by Battalion 2 in the Southwest Division of RCFD. There are currently four fire stations (Lake Elsinore Fire Station No. 10, McVicker Park Fire Station No. 85, Canyon Hills Fire Station No. 94, and Rosetta Canyon Station No. 97) within the City limits.

Although the fire stations are operated by RCFD, CalFire staffs firefighters and stores firefighting equipment at stations throughout the City, particularly during peak fire season. Both RCFD and CalFire respond to all types of emergencies, depending on the need and equipment available. Emergencies range from wildland fires, residential/commercial structure fires, automobile accidents, medical aid, search and rescue missions, hazardous materials spills, floods, and earthquakes. The nearest fire station to the project study area is Canyon Hills Fire Station No. 94, located approximately 1.6 miles east of the project study area.

The project does not include the construction of structures or features or changes in operation that would increase demand on fire protection services for the project site or area. However, traffic detours during construction may affect emergency response times. In addition, construction activities may slightly increase fire risks or increase the need for emergency response if there is an accident on the construction site. Adherence to **Minimization Measure TR-1**, presented below in Section 2.7.4, and **UES-4**, presented below in Section 2.6.4, which are standard conditions, would minimize the potential impacts that construction activities may have on emergency services providers and ensure impacts remain less than significant.

Police protection?

Less Than Significant Impact. The City of Lake Elsinore contracts for police protection from the County of Riverside Sheriff's Department. The police department currently employs a total of 38 sworn officers within the City. The Lake Elsinore Police Department/Sheriff's Station is located on the northeast edge of the lake at 333 Limited Avenue, approximately 1.2 miles southwest of the project study area. The California Highway Patrol (CHP) has jurisdiction on freeways in the State of California, including I-15. The nearest CHP area office is in Temecula at 27685 Commerce Center Drive, approximately 11 miles southeast from the project study area. The project does not include the construction of structures or features or changes in operation that would increase demand on police protection services in the area. However, traffic detours during construction may affect emergency response times. In addition, construction activities may slightly increase the need for emergency response if there is an accident on the construction site. Adherence to **Minimization Measure TR-1**, a standard condition presented below in Section 2.7.4, would minimize the potential impacts that construction activities may have on emergency services providers and ensure impacts remain less than significant.

XVIII. a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?

No Impact. The Santa Ana RWQCB regulates wastewater discharges within the drainage area around Lake Elsinore. The project is an infrastructure project and does not include a residential, industrial, or commercial component. Therefore, the project would not permanently generate wastewater. Because implementation of the project does not envision modifications in the current system of wastewater disposal in the area, no impact would occur. No mitigation is required.

XVIII. b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Less Than Significant Impact. The project is within the service boundary for the Elsinore Valley Municipal Water District (EVMWD). On-site water usage would be generally limited to the application of water on construction areas to control dust. The project does not include the development of uses that require additional potable or treated water, or the connection to existing potable/treated water systems. However, implementation of the project would require protection in place, removal, replacement, or relocation of existing utility facilities within the project disturbance limits. An updated utility search and potholing, as specified in **Minimization Measures UES-1** through **UES-3**, presented below in Section 2.6.3, would be required during final design to determine all utility conflicts that require positive location and/or relocation prior to and during project construction. Adherence to **Minimization Measures UES-1** through **UES-3**, which are standard conditions, would ensure that impacts remain less than significant.

XVIII. c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?

Less Than Significant Impact. The project includes roadway and interchange improvements to an existing transportation facility. No new or expanded storm drain facilities are proposed. However, implementation of the project would require protection in place, removal, replacement, or relocation of existing utility facilities within the project disturbance limits. An updated utility search and potholing, which are standard conditions as specified in **Minimization Measures UES-1** through **UES-3**, presented below in Section 2.6.3, would be required during final design to determine all utility conflicts that require positive location and/or relocation prior to and during project construction. Adherence to **Minimization Measures UES-1** through **UES-3** would ensure that impacts remain less than significant.

XVIII. d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?

No Impact. The project is an interchange improvement project which does not include a residential, industrial, or commercial component. Since the project does not include the construction or operation of any structure or facility that would permanently increase the demand for potable water, no new or expanded water entitlements would be required. Therefore, no impacts would occur, and no mitigation measures are required.

XVIII. e) Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

No Impact. As previously stated, the project is an interchange improvement project that does not include a residential, industrial, or commercial component. Since the project does not include the construction or operation of any structure or facility that would permanently increase the generation of wastewater, no new or expanded wastewater facilities or services would be required. Therefore, no impacts would occur, and no mitigation measures are required.

XVIII. f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?

Less Than Significant Impact. Waste from the project area is currently collected by the City's trash collection service provider, Waste Management, Inc. Once collected, solid waste is transported to El Sobrante Landfill, located in Temescal Canyon, south of Corona. The El Sobrante Landfill is a 495-acre facility owned and operated by a subsidiary of Waste Management, Inc. with a daily permitted throughput of 10,000 tons per day, a remaining capacity of 118,573,540 tons,[1] and an estimated closure date of 2030. Current average daily throughput of in-County waste is estimated at 3,315 tons, and out-of-County waste is estimated at 3,804 tons.[2] Current surplus capacity totals 2,881 tons/day.[3] The project is an infrastructure project. As such, the operation of the project would not increase the need for solid waste disposal. During construction, some construction waste would be generated. However, it

---

1 Cal Recycle. 2017. Solid Waste Information System (SWIS), Facility/Site Summary Details. Website: http://www.ciwmb.ca.gov/ SWIS/33-AA-0217/Detail/ (accessed October 6, 2010).

2 Correspondence from Sung Key Ma, Riverside County Waste Management Department Planner, dated August 17, 2008.

3 3,315 tons in-county + 3,804 out-of-county = 7,119 tons. 10,000 tons – 7,119 tons = 2,881 tons.

would not result in a substantive increase in the need for solid waste disposal. Therefore, there will be a less than significant impact and no mitigation measures are required.

XVIII. g) Comply with federal, state, and local statutes and regulations related to solid waste?

Less Than Significant Impact. The project consists of improvements to the existing roadway and interchange system. The operation of the project would not generate any solid waste. During construction, some construction waste would be generated. The project would be required to comply with applicable elements of AB 1327, Chapter 18 (California Solid Waste Reuse and Recycling Access Act of 1991), and other applicable local, State, and Federal solid waste disposal standards. Adherence to these solid waste requirements and standards would ensure that impacts would be less than significant. No mitigation measures are required.

2.6.3 Avoidance, Minimization, and/or Mitigation Measures

In addition to the following mitigation measures, implementation of a TMP, as discussed in detail in Section 2.7, Traffic and Transportation/Pedestrian and Bicycle Facilities, would minimize temporary construction-related impacts to emergency services.

Minimization Measures

UES-1 During the Plans, Specifications, and Estimates (PS&E) stage, the City of Lake Elsinore (City) shall conduct an updated utility search to determine all utility conflicts that require positive location, protection in place, and/or relocation. Proposed undergrounding of existing utilities will be coordinated and decided upon with the utility companies during the final design phase.

UES-2 During the PS&E stage, the City shall obtain encroachment permits from Caltrans for surveying and utility potholing within and immediately adjacent to the project disturbance limits. This measure applies only to work conducted within State right-of-way.

UES-3 Prior to commencement of construction, the City shall coordinate with all affected utility providers to establish exact procedures and specifications for all facilities to be protected in place and relocated during construction to ensure that utility services are not disrupted.

UES-4 **Fire Prevention During Construction:** Prior to and during any construction activities, the City shall require the construction contractor to implement the following measures to minimize the risk of fires during construction:

- Coordinate with the applicable local fire department to identify and maintain defensible spaces around active construction areas.
- Coordinate with the applicable local fire department to identify and maintain firefighting equipment (extinguishers, shovels, and water tankers) in active construction areas.
- Prohibit the use of mechanized equipment or equipment that could throw off sparks in areas adjacent to open space or undeveloped land.
- Post emergency services phone numbers (fire, emergency medical, and police) in visible locations in all active construction areas.

This page intentionally left blank

2.7 Traffic and Transportation/Pedestrian and Bicycle Facilities

2.7.1 Regulatory Setting

Caltrans, as assigned by Federal Highway Administration (FHWA), directs that full consideration should be given to the safe accommodation of pedestrians and bicyclists during the development of federal-aid highway projects (see 23 Code of Federal Regulations [CFR] 652). It further directs that the special needs of the elderly and the disabled must be considered in all federal-aid projects that include pedestrian facilities. When current or anticipated pedestrian and/or bicycle traffic presents a potential conflict with motor vehicle traffic, every effort must be made to minimize the detrimental effects on all highway users who share the facility.

In July 1999, the U.S. Department of Transportation (USDOT) issued an Accessibility Policy Statement pledging a fully accessible multimodal transportation system. Accessibility in federally assisted programs is governed by the USDOT regulations (49 CFR Part 27) implementing Section 504 of the Rehabilitation Act (29 United States Code [USC] 794). FHWA has enacted regulations for the implementation of the 1990 Americans with Disabilities Act (ADA), including a commitment to build transportation facilities that provide equal access for all persons. These regulations require application of the ADA requirements to federal-aid projects, including Transportation Enhancement Activities.

2.7.2 Affected Environment

This section is based on the following documents:

- *Traffic Impact Analysis – Interstate 15 (I-15) at Railroad Canyon Road Interchange* (August 2009)
- *Supplemental Traffic Memorandum – Updating Existing Traffic Data to 2009 and Opening Year to 2015* (December 2010)
- *Supplemental Traffic Impact Analysis- Phase 1 Improvements – I-15 at Railroad Canyon Interchange Opening Year 2015 Analysis* (June 2011)
- *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange* (November 2014)

These documents are collectively referred to as the “analysis” unless otherwise noted throughout this section. The 2014 Supplemental Traffic Impact Analysis studied the baseline traffic conditions (2013); opening year traffic demand for Alternatives 1, 2, 3, and 4, Phase 1 (2019); failure year traffic conditions for Alternative 4, Phase 1 (2025) and Alternatives 2 and 3, Phase 1 (2032); opening year traffic conditions for Alternative 4, Phase 2 (2025) and Alternatives 2 and 3, Phase 2 (2032); and future design year traffic conditions for Alternatives 1, 2, 3, and 4 (2040); and assessed the impact of the proposed improvements on traffic conditions.

The study area for the project includes the freeway mainline, ramps, and intersections in the vicinity of the interchange as well as adjacent interchanges. As identified in the Traffic Report, the study area is at I-15 on Railroad Canyon Road from Bundy Canyon Road to Main Street. In the project area, I-15 has three mixed-flow lanes in each direction, separated by a median. The existing I-15/Railroad Canyon Road interchange is a diamond interchange with single-lane on- and off-ramps. The major roadways in the study area are:

- Bundy Canyon Road, a four-lane facility with left-turn lanes at intersections
- Lemon Street, a two-lane facility

- Olive Street, a two-lane facility
- Railroad Canyon Road-Diamond Drive, a four-lane facility with left-turn lanes at intersections
- Franklin Street, a two-lane facility
- Main Street, a two-lane facility with left-turn lanes at intersections
- Grape Street, a two-lane to four-lane facility
- Summerhill Drive, a four-lane facility
- Mission Trail, a four-lane facility
- Lakeshore Drive, a four-lane facility
- Casino Drive-Auto Center Drive, a two-lane to four-lane facility

Existing freeway segments in the study area are as follows:

- Southbound:
  - Main Street On-Ramp to Railroad Canyon Road Off-Ramp
  - Railroad Canyon Road On-Ramp to Bundy Canyon Road Off-Ramp
- Northbound:
  - Bundy Canyon Road On-Ramp to Railroad Canyon Road Off-Ramp
  - Railroad Canyon Road On-Ramp to Main Street Off-Ramp

Sidewalks are provided on Railroad Canyon Road, Diamond Drive, Casino Drive, Grape Street, and Summerhill Drive within the project area. Railroad Canyon Road is designated as a Class II bicycle route in the City of Lake Elsinore General Plan, but no bike lane currently exists.

2.7.2.1 Baseline (2013) Traffic Conditions

FREEWAY MAINLINE

Table 2.7.A identifies the baseline (2013) mainline levels of service (LOS) during the a.m. and p.m. peak hours for the No Build Alternative. Traffic counts were recorded for passenger cars, two-axle trucks, three-axle trucks, and four-axle trucks. The trucks were factored into Passenger Car Equivalents (PCEs) that convert traffic volumes to an equivalent number of passenger cars based on the type of truck. As identified in Table 2.7.A, all freeway segments in the study area currently operate at LOS D or better during the a.m. and p.m. peak hours.

INTERSECTION LEVELS OF SERVICE

Table 2.7.A identifies the baseline (2013) LOS at intersections during the a.m. and p.m. peak hours for the No Build Alternative. As identified in Table 2.7.A, two out of the eleven study intersections analyzed, currently exceed the LOS standard of D during both a.m. and p.m. peak hours; three intersections exceed the LOS D standard during the p.m. peak hour, and two intersections exceeds the LOS D standard during the a.m. peak hour.

FREEWAY RAMPS

Table 2.7.A summarizes the baseline (2013) a.m. and p.m. peak hour levels of service for the I-15/Railroad Canyon Road, I-15/Main Street, and I-15/Bundy Canyon Road freeway ramp influence areas for the No Build Alternative. As identified in Table 2.7.A, all freeway ramp junctions are operating at LOS D or better during the a.m. peak hour and at LOS E or better during the p.m. peak hour.

Table 2.7.A: 2013 Mainline/Intersection/Freeway Ramp Levels of Service, No Build Alternative

Freeway Segment/Intersection/Ramp Junction	Level of Service	
	A.M. Peak Hour	P.M. Peak Hour
I-15 Mainline Segment		
Southbound		
I-15 (Bundy Canyon Road to Railroad Canyon Road)	C	C
I-15 (Railroad Canyon Road to Main Street)	C	D
Northbound		
I-15 (Bundy Canyon Road to Railroad Canyon Road)	C	C
I-15 (Railroad Canyon Road to Main Street)	D	C
Intersection		
Franklin Street/Avenue 6 (Stop Condition)	B	C
Franklin Street/Auto Center Drive	A	A
Franklin Street at Canyon View Dr-Grunder Dr (Stop Condition)	B	B
Diamond Drive-Railroad Canyon Road/Mission Trail-Lake Shore Drive	B	C
Diamond Drive-Railroad Canyon Road/Casino Road-Auto Center Drive	B	C
Railroad Canyon Road/I-15 SB Ramps	D	E
Railroad Canyon Road/I-15 NB Ramps	E	F
Railroad Canyon Road/Grape Street-Summerhill Drive	F	F
Main Street/I-15 SB Ramps (Stop Condition)	C	B
Main Street/I-15 NB Ramps (Stop Condition)	C	C
Main Street/Camino Del Norte (Stop Condition)	B	C
Ramp Junction		
Southbound		
Main Street Entrance Ramp	C	D
Railroad Canyon Road Exit Ramp	D	E
Railroad Canyon Road Entrance Ramp	D	D
Bundy Canyon Road Exit Ramp	D	C
Northbound		
Bundy Canyon Road Entrance Ramp	D	D
Railroad Canyon Road Exit Ramp	D	D
Railroad Canyon Road Entrance Ramp	D	D
Main Street Exit Ramp	D	D

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 16, Table 1, and Table 24 (November 2014).
I-15 = Interstate 15
NB = northbound
SB = southbound

FREEWAY EXIT RAMP QUEUING

Table 2.7.B summarizes the baseline (2013) a.m. and p.m. peak hour queuing lengths for the Railroad Canyon Road exit ramps for the No Build Alternative. As identified in Table 2.7.B, the a.m. and p.m. peak hour queue exceeds the available ramp length and queuing occurs at the southbound exit ramp on Railroad Canyon Road, and during the p.m. peak hour queue exceeds the available ramp length, and queuing also occurs at the northbound exit ramp on Railroad Canyon Road.

Table 2.7.B: Baseline Year (2013) Queue Lengths

Ramp Junction	Available Ramp Lane Length (LF)	Queuing Length 95th (LF)		Queue Exceeds Pocket?
		A.M. Peak Hour	P.M. Peak Hour	
Railroad Canyon Road SB Exit Ramp	295	308	585	Yes
Railroad Canyon Road NB Exit Ramp	340	233	392	No-A.M. Yes-P.M.
Main Street NB Exit Ramp	955	146	108	No

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 38 (November 2014).
LF = linear feet
NB = northbound
SB = southbound

FREEWAY RAMP METER QUEUING ANALYSIS

Because the existing Railroad Canyon Road entrance ramps are not metered, a ramp metering analysis for baseline year (2013) conditions was not performed for the existing ramps.

FREEWAY WEAVE-MERGE ANALYSIS

Under baseline (2013) conditions, no weaving analysis was conducted because no weaving section in the study area is less than 2,500 feet (ft) in length. The Bundy Canyon Road interchange ramps are located more than 12,000 ft to the south of the Railroad Canyon Road interchange ramps, and the Main Street interchange ramps are located more than 6,500 ft to the north.

2.7.3 Environmental Consequences

2.7.3.1 Temporary Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

The No Build Alternative would not involve any construction activities; therefore, no temporary impacts would occur.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

Traffic delays are expected during project construction for the ramp widening and reconstruction, freeway widening, modifications to local intersections, and the construction of a new interchange.

No extended ramp closures are anticipated for this project. Construction of the project would temporarily affect traffic on Railroad Canyon Road, Franklin Street, the I-15 mainline, and the I-15 ramps associated with each of the interchanges. Freeway operations may be affected during construction of the ramps, the new I-15/Franklin Street interchange and associated improvements. Limiting construction to off-peak hours would minimize impacts to operation of the I-15 mainline and/or ramps during ongoing construction, if necessary. Temporary nighttime closures of mainline lanes and the on-ramp and off-ramps in either direction may be required during construction.

Sidewalk closures on Railroad Canyon Road and Franklin Street and roadwork during construction would affect pedestrian and bicycle access. Staged construction plans would include provisions for maintaining pedestrian and bicycle access at all times during construction.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

Temporary construction impacts identified for Alternative 3 would be similar as those identified for Alternative 2. Traffic delays are expected during project construction for the ramp widening and reconstruction, modifications to local intersections, and the construction of a new interchange. No extended ramp closures are anticipated for this project. Construction of the project would temporarily affect traffic on Railroad Canyon Road, Franklin Street, the I-15 mainline, and the I-15 ramps. Freeway operations may be affected during construction of the ramps, construction of the proposed I-15/Franklin Street interchange, and associated project improvements. Limiting construction to off-peak hours would minimize impacts to operation of the I-15 mainline and/or ramps during ongoing construction, if necessary. Temporary nighttime closures of mainline lanes and the on-ramps and off-ramps in either direction may be required during construction.

Sidewalk closures on Railroad Canyon Road and Franklin Street and roadwork during construction would affect pedestrian and bicycle access. Staged construction plans would include provisions for maintaining pedestrian and bicycle access at all times during construction.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

Temporary construction impacts identified for Alternative 4 would be similar as those identified for Alternatives 2 and 3. Traffic delays are expected during project construction for the ramp widening and reconstruction, modifications to local intersections, and the construction of a new interchange. Construction of the project would temporarily affect traffic on Railroad Canyon Road, Franklin Street, the I-15 mainline, and the I-15 ramps. Freeway operations may be affected during construction of the ramps, construction of the proposed I-15/Franklin Street interchange, and associated project improvements. Limiting construction to off-peak hours would minimize impacts to operation of the I-15 mainline and/or ramps during ongoing construction, if necessary. Closures of mainline lanes and the on-ramps and off-ramps in either direction may be required during construction for a maximum of ten full days.

Sidewalk closures on Railroad Canyon Road and Franklin Street and roadwork during construction would affect pedestrian and bicycle access. Staged construction plans would include provisions for maintaining pedestrian and bicycle access at all times during construction.

2.7.3.2 Permanent Impacts

Permanent impacts for opening year traffic demand for Alternatives 1, 2, 3, and 4, Phase 1 (2019); failure year traffic conditions for Alternative 4, Phase 1 (2025) and Alternatives 2 and 3, Phase 1 (2032); opening year traffic conditions for Alternative 4, Phase 2 (2025) and Alternatives 2 and 3, Phase 2 (2032); and future design year traffic conditions for Alternatives 1, 2, 3, and 4 (2040) were analyzed.

As identified in Caltrans' Policy Memorandum, Policy Implications of *Sunnyvale West Neighborhood Association et al v. City of Sunnyvale*, 190 Cal. App. 4th 1351 (2010), the most important point from this case is that a traffic impact analysis, just like any other environmental impact analysis under the California Environmental Quality Act (CEQA), must contain an explicit discussion of the future conditions with project compared to the existing baseline conditions. While a comparison of future build to future no build is sufficient for impact assessment under the National Environmental Policy Act (NEPA), a CEQA analysis cannot rely solely on that future analysis and there must be a comparison to baseline conditions. Baseline conditions are the existing physical conditions in the affected area as they exist at the time the notice of preparation is published, or where no notice of preparation is published, at the time the environmental analysis is completed.

As the memorandum states, many agencies are interpreting the *Sunnyvale* case to state that modeling of the "existing plus project" scenario is required; this is not Caltrans' reading of the case and Caltrans is not advocating the modeling of "existing plus" project for its projects. Caltrans' reading of the case is that while the Court did discuss that as one possible approach to glean the project's impacts when compared to baseline conditions, it is just that, one possible approach. Another possible approach and the one currently being used for the project is to take the difference of the future build versus future no build as a measure of the project's impacts and then compare that back to the baseline.

No Build Alternative: Opening Year (2019) Analysis

Freeway Mainline

Table 2.7.C summarizes the opening year (2019) a.m. and p.m. peak hour levels of service for study area freeway segments under the No Build Alternative. As identified in Table 2.7.C, during the a.m. peak hour, all but one of the northbound and southbound freeway segments in the study area are projected to operate at LOS C or better. During the p.m. peak hour, all freeway segments are projected to operate at LOS E or better.

Intersection Levels of Service

Table 2.7.C identifies the LOS for mainline I-15 in opening year (2019) with the No Build Alternative. As identified in Table 2.7.C, six of the 11 remaining study area intersections are projected to operate at LOS E or F during the p.m. peak hour. During the a.m. peak hour, two study area intersections are projected to operate at LOS F.

Freeway Ramps

Table 2.7.C summarizes the opening year (2019) a.m. and p.m. peak hour levels of service for the Railroad Canyon/I-15, Main Street/I-15, and I-15/Bundy Canyon Road freeway ramp influence areas under the No Build Alternative. As identified in Table 2.7.C, all southbound and northbound freeway ramp junctions are projected to operate at LOS E or better during the a.m. peak hour. During the p.m. peak hour, all northbound ramp junctions are projected to operate at LOS D or better.

Freeway Exit Ramp Queuing

It is anticipated that existing deficient conditions would continue under the No Build Alternative. As identified in Table 2.7.D, the a.m. and p.m. peak hour queue for the southbound and northbound Railroad Canyon Road exit ramps would exceed the available ramp length, and queuing would occur along the mainline.

Table 2.7.C: 2019 Mainline/Intersection/Freeway Ramp Levels of Service, No Build Alternative

Freeway Segment/Intersection/Ramp Junction	Level of Service	
	A.M. Peak Hour	**P.M. Peak Hour**
I-15 Mainline Segment		
Southbound		
I-15 (Bundy Canyon Road to Railroad Canyon Road)	C	D
I-15 (Railroad Canyon Road to Main Street)	C	E
Northbound		
I-15 (Bundy Canyon Road to Railroad Canyon Road)	C	D
I-15 (Railroad Canyon Road to Main Street)	D	D
Intersection		
Franklin Street/Avenue 6 (Stop Condition)	B	C
Franklin Street/Auto Center Drive	A	A
Franklin Street at Canyon View Dr-Grunder Dr (Stop Condition)	A	B
Diamond Drive-Railroad Canyon Road/Mission Trail-Lake Shore Drive	C	D
Diamond Drive-Railroad Canyon Road/Casino Road-Auto Center Drive	C	C
Railroad Canyon Road/I-15 SB Ramps	D	F
Railroad Canyon Road/I-15 NB Ramps	E	F
Railroad Canyon Road/Grape Street-Summerhill Drive	F	F
Main Street/I-15 SB Ramps (Stop Condition)	D	F
Main Street/I-15 NB Ramps (Stop Condition)	F	F
Main Street/Camino Del Norte (Stop Condition)	C	E
Ramp Junction		
Southbound		
Main Street Entrance Ramp	D	F
Railroad Canyon Road Exit Ramp	D	F
Railroad Canyon Road Entrance Ramp	D	D
Bundy Canyon Road Exit Ramp	D	E
Northbound		
Bundy Canyon Road Entrance Ramp	D	D
Railroad Canyon Road Exit Ramp	D	D
Railroad Canyon Road Entrance Ramp	E	D
Main Street Exit Ramp	E	D

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 17, Table 2, and Table 25 (November 2014).
I-15 = Interstate 15
NB = northbound
SB = southbound

Table 2.7.D: 2019 Freeway Exit Ramp Queuing, No Build Alternative

Ramp Junction	Available Ramp Lane Length (LF)	Queuing Length 95th (LF)		Queue Exceeds Pocket?
		A.M. Peak Hour	P.M. Peak Hour	
Railroad Canyon Road SB Exit Ramp	295	404	690	Yes
Railroad Canyon Road NB Exit Ramp	340	344	478	Yes
Main Street NB Exit Ramp (Stop Condition)	955	639	584	No

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 39 (November 2014).
LF = linear feet
NB = northbound
SB = southbound

Freeway Ramp Metering Queuing

Because the existing Railroad Canyon Road entrance ramps are not metered, a ramp metering analysis was not performed for the existing ramps.

Freeway Ramp Weave-Merge

No weaving analysis was conducted because no weaving section in the study area is less than 2,500 ft in length for the existing condition. The Bundy Canyon Road interchange ramps are located more than 12,000 ft to the south of the Railroad Canyon Road interchange ramps, and the Main Street interchange ramps are located more than 6,500 ft to the north. According to the Highway Capacity Manual, the maximum length for which a weaving analysis is conducted is 2,500 ft. Beyond this length, merge and diverge areas are considered separately using the Ramps and Ramp Junctions methodology.

NO BUILD ALTERNATIVE: DESIGN YEAR (2040) ANALYSIS

Freeway Mainline

Table 2.7.E summarizes the design year (2040) a.m. and p.m. levels of service for study area freeway segments for the No Build Alternative. During the a.m. and p.m. peak hours, all northbound and southbound freeway segments in the study area are projected to operate at LOS E or worse because the projected volume on the freeway exceeds its capacity.

Intersection Levels of Service

Table 2.7.E summarizes the design year (2040) a.m. and p.m. peak hour levels of service for the study intersections for the No Build Alternative. As identified in Table 2.7.E, all intersections of Railroad Canyon Road (Grape Street-Summerhill Drive, I-15 northbound ramps, I-15 southbound ramps, Casino Drive-Auto Center Drive, and Mission Trail-Lake Shore Drive) are projected to operate at LOS E or worse during both the a.m. and p.m. peak hours. All intersections of Main Street (Camino Del Norte, I-15 northbound ramps, and I-15 southbound ramps) are projected to operate to LOS F during both the a.m. and p.m. peak hours.

Table 2.7.E: 2040 Mainline/Intersection/Freeway Ramp Levels of Service, No Build Alternative

Freeway Segment/Intersection/Ramp Junction	Level of Service	
	A.M. Peak Hour	**P.M. Peak Hour**
I-15 Mainline Segment		
Southbound		
I-15 (Bundy Canyon Road to Railroad Canyon Road)	E	F
I-15 (Railroad Canyon Road to Main Street)	E	F
Northbound		
I-15 (Bundy Canyon Road to Railroad Canyon Road)	E	F
I-15 (Railroad Canyon Road to Main Street)	F	F
Intersection		
Franklin Street/Avenue 5 (Stop Condition)	B	F
Avenue 6-Franklin Street/Auto Center Drive	A	B
Franklin Street at Canyon View Drive-Grunder Drive (Stop Condition)	B	C
Diamond Drive-Railroad Canyon Road/Mission Trail-Lake Shore Drive	E	F
Diamond Drive-Railroad Canyon Road/Casino Road-Auto Center Drive	E	F
Railroad Canyon Road/I-15 SB Ramps	F	F
Railroad Canyon Road/I-15 NB Ramps	F	F
Railroad Canyon Road/Grape Street/Summerhill Drive	F	F
Main Street/I-15 SB Ramps	F	F
Main Street/I-15 NB Ramps	F	F
Main Street/Camino Del Norte	F	F
Ramp Junction		
Southbound		
Main Street Entrance Ramp	F	F
Railroad Canyon Road Exit Ramp	E	F
Railroad Canyon Road Entrance Ramp	F	F
Bundy Canyon Road Exit Ramp	E	F
Northbound		
Bundy Canyon Road Entrance Ramp	F	F
Railroad Canyon Road Exit Ramp	F	F
Railroad Canyon Road Entrance Ramp	F	F
Main Street Exit Ramp	F	F

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 22, Table 12, and Table 31 (November 2014).
I-15 = Interstate 15
NB = northbound
SB = southbound

Freeway Ramps

Table 2.7.E provides the design year (2040) a.m. and p.m. peak hour levels of service for the Railroad Canyon Road/I-15 and Main Street/I-15 freeway ramp influence areas under the No Build Alternative. As identified in Table 2.7.E, all ramps in the study area but two southbound freeway ramp junctions during the a.m. peak hours are projected to operate at LOS F during both the a.m. and p.m. peak hours. This is the result of high traffic volumes on I-15.

Freeway Exit Ramp Queuing

Table 2.7.F summarizes the future year (2040) a.m. and p.m. peak hour queuing lengths for the Railroad Canyon Road exit ramps for the No Build Alternative.

Table 2.7.F: 2040 Queue Lengths, No Build Alternative

Ramp Junction	Available Ramp Lane Length (LF)	Queuing Length 95th (LF)		Queue Exceeds Pocket?
		A.M. Peak Hour	P.M. Peak Hour	
Railroad Canyon Road SB Exit Ramp	295	610	1188	Yes
Railroad Canyon Road NB Exit Ramp	340	503	868	Yes
Main Street NB Exit Ramp (Stop Condition)	955	2,902	1,829	Yes

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 58 (November 2014).
LF = linear feet
NB = northbound
SB = southbound

As identified in Table 2.7.F, the analysis revealed that the a.m. and p.m. peak hour queues would exceed the available ramp length and queuing overflow would occur.

Freeway Ramp Meter Queuing

Because the existing Railroad Canyon Road entrance ramps are not metered, a ramp metering analysis was not performed for the existing ramps for the No Build Alternative.

Freeway Weave-Merge

No weaving analysis was conducted because no weaving section in the study area is less than 2,500 ft in length for the existing condition. The Main Street interchange ramps are located more than 6,500 ft to the north. According to the Highway Capacity Manual, the maximum length for which a weaving analysis is conducted is 2,500 ft. Beyond this length, merge and diverge areas are considered separately using the Ramps and Ramp Junctions methodology.

Pedestrian Access and Bicycle Facilities

The No Build Alternative would not involve any construction; therefore, existing nonstandard curb ramps would not be upgraded and proposed bicycle lanes would not be implemented unless they were completed as part of a local project.

ALTERNATIVE 2 -PHASE 1: NORTHBOUND HOOK RAMPS TO GRAPE STREET —OPENING YEAR (2019) ANALYSIS

Freeway Mainline

Table 2.7.G summarizes the opening year (2019) a.m. and p.m. peak hour levels of service for study area freeway segments under Alternative 2-Phase 1. During the a.m. peak hour, the northbound and southbound freeway segments in the study area are projected to operate at LOS D or better. During the p.m. peak hour, all freeway segments are projected to operate at LOS E or better.

Table 2.7.G: 2019 Mainline/Intersection/Freeway Ramp Levels of Service, Alternative 2-Phase 1

Freeway Segment/Intersection/Ramp Junction	Level of Service	
	A.M. Peak Hour	P.M. Peak Hour
I-15 Mainline Segment		
Southbound		
I-15 (Bundy Canyon Road to Railroad Canyon Road)	C	D
I-15 (Railroad Canyon Road to Main Street)	C	E
Northbound		
I-15 (Bundy Canyon Road to Railroad Canyon Road)	C	D
I-15 (Railroad Canyon Road to Main Street)	D	D
Intersection		
Franklin Street/Avenue 6 (Stop Condition)	B	C
Franklin Street/Auto Center Drive	A	A
Franklin Street at Canyon View Dr-Grunder Dr (Stop Condition)	A	B
Diamond Drive-Railroad Canyon Road/Mission Trail-Lake Shore Drive	B	B
Diamond Drive-Railroad Canyon Road/Casino Road-Auto Center Drive	B	B
Railroad Canyon Road/I-15 SB Ramps	B	B
Railroad Canyon Road/I-15 NB Ramps	B	D
Railroad Canyon Road/Grape Street-Summerhill Drive	C	D
Main Street/I-15 SB Ramps (Stop Condition)	D	F
Main Street/I-15 NB Ramps (Stop Condition)	F	F
Main Street/Camino Del Norte (Stop Condition)	C	E
Ramp Junction		
Southbound		
Main Street Entrance Ramp	D	F
Railroad Canyon Road Exit Ramp	B	F
Railroad Canyon Road Entrance Ramp	C	D
Bundy Canyon Road Exit Ramp	D	E
Northbound		
Bundy Canyon Road Entrance Ramp	D	D
Railroad Canyon Road Exit Ramp	C	C
Railroad Canyon Road Entrance Ramp	D	D
Main Street Exit Ramp	E	D

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 17, Table 3, and Table 26 (November 2014).
I-15 = Interstate 15
NB = northbound
SB = southbound

Intersection Levels of Service

Table 2.7.G identifies LOS for the study area intersections in opening year (2019) under Alternative 2-Phase 1. As identified in Table 2.7.G, the intersections of Railroad Canyon Road (Grape Street-Summerhill Drive and I-15 southbound ramps, I-15 northbound ramps) operate at LOS D better during the a.m. and p.m. peak hours. The intersections of Franklin Street (Avenue 6, Auto Center Drive, and Canyon View-Grunder Drive) are projected to operate at LOS C or better during the a.m. and p.m. peak hours.

All intersections of Main Street (Camino Del Norte, I-15 northbound ramps, and I-15 southbound ramps) are projected to operate to LOS F or better during both the a.m. and p.m. peak hours.

Freeway Ramps

Table 2.7.G summarizes the opening year (2019) a.m. and p.m. peak hour levels of service for the Railroad Canyon/I-15, Main Street/I-15, and I-15/Bundy Canyon Road freeway ramp influence areas under Alternative 2-Phase 1. As identified in Table 2.7.G, all northbound freeway ramp junctions are projected to operate at LOS E or better during the a.m. peak hour, and the southbound freeway ramp junctions are projected to operate at LOS D or better during the a.m. peak hour. During the p.m. peak hour, all northbound ramps are projected to operate at LOS D or better while all southbound ramps are projected to operate at LOS F or better.

Freeway Exit Ramp Queuing

Table 2.7.H summarizes the opening year (2019) a.m. and p.m. peak hour queuing lengths for all the exit ramps in the study area). Based on the data contained in Table 2.7.H, no queuing overflow would occur during the a.m. or p.m. peak hour under Alternative 2-Phase 1.

Table 2.7.H: 2019 Exit Ramp Queue Lengths, Alternative 2-Phase 1

Ramp Junction	Available Storage (ft)	Queuing Length (ft)		Queue Exceeds Pocket?
		A.M. Peak Hour	P.M. Peak Hour	
Railroad Canyon Road SB Exit Ramp	460	174	320	No
Grape Street-Railroad Canyon Road NB Exit Ramp	725	163	271	No
Main Street NB Exit Ramp (Stop Condition)	955	639	584	No

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 40 (November 2014).
ft = foot/feet
NB = northbound
SB = southbound

Freeway Entrance Ramp Meter Queuing

Ramp meters are planned at all entrance ramps under Alternative 2. Table 2.7.I summarizes the opening year (2019) a.m. and p.m. peak hour queuing on the entrance ramps for Alternative 2-Phase 1. The analysis revealed that the Total Ramp Demand does not exceed the Total Ramp Meter Rate. Therefore, no queuing would occur during the a.m. and p.m. peak hours under this alternative.

Table 2.7.I: 2019 Entrance Ramp Meter Queuing Summary, Alternative 2-Phase 1

Ramp Junction	Total Ramp Meter Rate (VPH)	Peak Hour		Demand Exceeds Rate?
		A.M.	P.M.	
Railroad Canyon Road SB Entrance Ramp	1,440	757	561	No
Grape Street-Railroad Canyon Road NB Entrance Ramp	1,440	1,286	991	No

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 41 (November 2014).
NB = northbound
SB = southbound
VPH = vehicles per hour

Freeway Weave-Merge

No weaving analysis was conducted because no weaving section in the study area is less than 2,500 ft in length for the existing condition. The Bundy Canyon Road interchange ramps are located more than 12,000 ft to the south of the Railroad Canyon Road interchange ramps, and the Main Street interchange ramps are located more than 6,500 ft to the north. According to the Highway Capacity Manual, the maximum length for which a weaving analysis is conducted is 2,500 ft. Beyond this length, merge and diverge areas are considered separately using the Ramps and Ramp Junctions methodology.

ALTERNATIVE 2-PHASE 1: NORTHBOUND HOOK RAMPS TO GRAPE STREET — FAILURE YEAR (2032) ANALYSIS

Freeway Mainline

Table 2.7.J identifies the LOS for I-15 mainline segments in Failure Year (2032) conditions with Alternative 2-Phase 1. All mainline freeway segments would operate at LOS D or worse during the a.m. peak hour, while all mainline freeway segments would operate at LOS E, with the exception of the southbound segment from Railroad Canyon Road to Main Streets, which would operate at LOS F, during p.m. peak hour.

Intersection Levels of Service

Table 2.7.J identifies the LOS for study area intersections in failure year (2032) under Alternative 2-Phase 1. As identified in Table 2.7.J, two of the three intersections of Railroad Canyon Road (Grape Street-Summerhill Drive and I-15 southbound/northbound ramps) operate at LOS B during the a.m. and LOS C during the p.m. peak hours. The intersections of Franklin Street (Avenue 6, Auto Center Drive, and Canyon View-Grunder Drive) are projected to operate at LOS D or better during the a.m. and p.m. peak hours. All intersections of Main Street (Camino Del Norte, I-15 northbound ramps, and I-15 southbound ramps) are projected to operate to at LOS F during both the a.m. and p.m. peak hours.

Freeway Ramps

Table 2.7.J summarizes the failure year (2032) a.m. and p.m. peak hour levels of service for the Railroad Canyon/I-15 and Main Street/I-15 freeway ramp influence areas under Alternative 2-Phase 1. As identified in Table 2.7.J, all southbound freeway ramp junctions are projected to operate at LOS F during the p.m. peak hour. During the a.m. peak hour, five of the eight ramp junctions are projected to operate at LOS E or worse.

Freeway Exit Ramp Queuing

Table 2.7.K summarizes the failure year (2032) a.m. and p.m. peak hour queuing lengths for all exit ramps within the study area (Railroad Canyon Road Southbound Exit Ramp, Grape Street-Railroad Canyon Road Northbound Exit Ramp, and the Main Street Northbound Exit Ramps) for Alternative 2-Phase 1. As indicated in Table 2.7.K, queuing would occur during the a.m. and p.m. peak hour on the Main Street northbound exit ramp and during the p.m. peak hour at Railroad Canyon Road southbound exit ramp.

Freeway Entrance Ramp Metering

Ramp meters are planned at two entrance ramps for Phase 1 of this alternative. Table 2.7.L summarizes the failure year (2032) a.m. and p.m. peak hour queuing on the entrance ramps. The analysis reveals that the Total Ramp Demand would exceed the Total Ramp Meter Rate and that queuing would occur at Grape Street-Railroad Canyon Road northbound entrance ramp during the a.m. peak hour.

Table 2.7.J: 2032 Mainline/Intersection/Freeway Ramp Levels of Service, Alternative 2-Phase 1

Freeway Segment/Intersection/Ramp Junction	Level of Service	
	A.M. Peak Hour	P.M. Peak Hour
I-15 Mainline Segment		
Southbound		
I-15 (Bundy Canyon Road to Railroad Canyon Road)	D	E
I-15 (Railroad Canyon Road to Main Street)	D	F
Northbound		
I-15 (Bundy Canyon Road to Railroad Canyon Road)	D	E
I-15 (Railroad Canyon Road to Main Street)	F	E
Intersection		
Franklin Street/Avenue 6 (Stop Condition)	B	D
Franklin Street/Auto Center Drive	A	A
Franklin Street at Canyon View Dr-Grunder Dr (Stop Condition)	B	B
Diamond Drive-Railroad Canyon Road/Mission Trail-Lake Shore Drive	B	C
Diamond Drive-Railroad Canyon Road/Casino Road-Auto Center Drive	B	B
Railroad Canyon Road/I-15 SB Ramps	B	C
Railroad Canyon Road/I-15 NB Ramps	B	C
Railroad Canyon Road/Grape Street-Summerhill Drive	D	F
Main Street/I-15 SB Ramps (Stop Condition)	F	F
Main Street/I-15 NB Ramps (Stop Condition)	F	F
Main Street/Camino Del Norte (Stop Condition)	F	F
Ramp Junction		
Southbound		
Main Street Entrance Ramp	E	F
Railroad Canyon Road Exit Ramp	C	F
Railroad Canyon Road Entrance Ramp	D	F
Bundy Canyon Road Exit Ramp	E	F
Northbound		
Bundy Canyon Road Entrance Ramp	E	F
Railroad Canyon Road Exit Ramp	C	D
Railroad Canyon Road Entrance Ramp	F	F
Main Street Exit Ramp	F	E

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 18, Table 6, and Table 27 (November 2014).
I-15 = Interstate 15
NB = northbound
SB = southbound

Table 2.7.K: 2032 Freeway Exit Ramp Queuing, Alternative 2-Phase 1

Ramp Junction	Available Ramp Lane Length (LF)	Queuing Length 95th (LF)		Queue Exceeds Pocket?
		A.M. Peak Hour	P.M. Peak Hour	
Railroad Canyon Road SB Exit Ramp	460	175	501	No – A.M. Yes – P.M.
Railroad Canyon Road NB Exit Ramp	725	258	390	No
Main Street NB Exit Ramp (Stop Condition)	955	2066	1525	Yes

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 46 (November 2014).
LF = linear feet
NB = northbound
SB = southbound

Table 2.7.L: 2032 Entrance Ramp Meter Queuing Summary, Alternative 2-Phase 1

Ramp Junction	Total Ramp Meter Rate (VPH)	Peak Hour		Demand Exceeds Rate?
		A.M.	P.M.	
Railroad Canyon Road SB Entrance Ramp	1,440	995	708	No
Grape Street-Railroad Canyon Road NB Entrance Ramp	1,440	1,622	1,250	Yes-A.M. No-P.M.

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 47 (November 2014).
NB = northbound
SB = southbound
VPH = vehicles per hour

Freeway Weave-Merge

No weaving analysis was conducted because no weaving section in the study area is less than 2,500 ft in length for the existing condition. The Bundy Canyon Road interchange ramps are located more than 12,000 ft to the south of the Railroad Canyon Road interchange ramps, and the Main Street interchange ramps are located more than 6,500 ft to the north. According to the Highway Capacity Manual, the maximum length for which a weaving analysis is conducted is 2,500 ft. Beyond this length, merge and diverge areas are considered separately using the Ramps and Ramp Junctions methodology.

ALTERNATIVE 2-PHASE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET — OPENING YEAR (2032) ANALYSIS

Freeway Mainline

Table 2.7.M identifies the LOS for I-15 mainline segments in opening year (2032) conditions with Alternative 2-Phase 2. As Table 2.7.M indicates, during the a.m. and p.m. peak hour, the northbound and southbound freeway segments in the study area are projected to operate at LOS C or better.

Table 2.7.M: 2032 Mainline/Intersection/Freeway Ramp Levels of Service, Alternative 2-Phase 2

Freeway Segment/Intersection/Ramp Junction	Level of Service	
	A.M. Peak Hour	**P.M. Peak Hour**
I-15 Mainline Segment		
Southbound		
I-15 (Bundy Canyon Road to Railroad Canyon Road)	C	C
I-15 (Railroad Canyon Road to Main Street)	B	C
I-15 (Franklin Street to Main Street)	B	C
Northbound		
I-15 (Bundy Canyon Road to Railroad Canyon Road)	C	C
I-15 (Railroad Canyon Road to Main Street)	C	C
I-15 (Franklin Street to Main Street)	C	C
Intersection		
Franklin Street/Avenue 6/Auto Center Drive	C	C
Franklin Street/SB Ramps	B	B
Franklin Street/NB Ramps	B	A
Franklin Street at Camino Del Norte	A	A
Diamond Drive-Railroad Canyon Road/Mission Trail-Lake Shore Drive	B	B
Diamond Drive-Railroad Canyon Road/Casino Road-Auto Center Drive	B	B
Railroad Canyon Road/I-15 SB Ramps	B	B
Railroad Canyon Road/I-15 NB Ramps	B	B
Railroad Canyon Road/Grape Street-Summerhill Drive	C	D
Main Street/I-15 SB Ramps (Stop Condition)	B	C
Main Street/I-15 NB Ramps (Stop Condition)	C	C
Main Street/Camino Del Norte (Stop Condition)	B	C
Ramp Junction		
Southbound		
Main Street Entrance Ramp	C	C
Franklin Street Exit Ramp	D	D
Franklin Street Entrance Ramp	C	C
Railroad Canyon Road Exit Ramp	C	E
Railroad Canyon Road Entrance Ramp	C	C
Bundy Canyon Road Exit Ramp	B	C
Northbound		
Bundy Canyon Road Entrance Ramp	C	C
Railroad Canyon Road Exit Ramp	B	C
Railroad Canyon Road Entrance Ramp	D	C
Franklin Street Exit Ramp	C	C
Franklin Street Entrance Ramp	C	C

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 20, Table 9, and Table 29 (November 2014).
I-15 = Interstate 15
NB = northbound
SB = southbound

Intersection Levels of Service

Table 2.7.M identifies the LOS for the study area intersections in opening year (2032) under Alternative 2-Phase 2. As identified in Table 2.7.M, four of the five intersections of Railroad Canyon Road operate at LOS B during the a.m. and p.m. peak hours. The intersections of Franklin Street are projected to operate at LOS C or better during the a.m. and p.m. peak hours.

All intersections of Main Street (Camino Del Norte, I-15 northbound ramps, and I-15 southbound ramps) are projected to operate to at LOS C or better during both the a.m. and p.m. peak hours.

Freeway Ramps

Table 2.7.M summarizes the opening year (2032) a.m. and p.m. peak hour levels of service for the Railroad Canyon/I-15 and Main Street/I-15 freeway ramp influence areas under Alternative 2-Phase 2. As identified in Table 2.7.M, all but one southbound freeway ramp junctions are projected to operate at LOS D or better during the a.m. and p.m. peak hour. All of the northbound freeway ramp junctions are projected to operate at LOS D or better during both the a.m. and p.m. peak hour.

Freeway Exit Ramp Queuing

Table 2.7.N summarizes the opening year (2032) a.m. and p.m. peak hour queuing lengths for all exit ramps within the study area (Railroad Canyon Road Southbound Exit Ramp, Grape Street-Railroad Canyon Road Northbound Exit Ramp, Franklin Street Northbound and Southbound Exit Ramps, and the Main Street Northbound Exit Ramps) for Alternative 2-Phase 2. As indicated in Table 2.7.N, queuing would not occur during the a.m. or p.m. peak hour for any of the ramps.

Table 2.7.N: 2032 Freeway Exit Ramp Queuing, Alternative 2-Phase 2

Ramp Junction	Available Ramp Lane Length (LF)	Queuing Length 95th (LF)		Queue Exceeds Pocket?
		A.M. Peak Hour	P.M. Peak Hour	
Railroad Canyon Road SB Exit Ramp	460	145	264	No
Grape Street-Railroad Canyon Road NB Exit Ramp	725	147	209	No
Franklin Street SB Exit Ramp	685	102	223	No
Franklin Street NB Exit Ramp	535	82	62	No
Main Street NB Exit Ramp (Stop Condition)	955	298	308	No

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 52 (November 2014).
LF = linear feet
NB = northbound
SB = southbound

Freeway Entrance Ramp Metering Queuing

Ramp meters are planned at five entrance ramps for Phase 2 of this alternative. Table 2.7.O summarizes the opening year (2032) a.m. and p.m. peak hour queuing on the entrance ramps. The analysis reveals that the Total Ramp Demand does not exceed the Total Ramp Meter Rate and that no queuing would occur during the a.m. or p.m. peak hours.

Table 2.7.O: 2032 Entrance Ramp Meter Queuing Summary, Alternative 2-Phase 2

Ramp Junction	Total Ramp Meter Rate (VPH)	Peak Hour		Demand Exceeds Rate?
		A.M.	P.M.	
Railroad Canyon Road SB Entrance Ramp	1,440	721	524	No
Grape Street-Railroad Canyon Road NB Entrance Ramp	1,440	1,253	966	No
Franklin Street SB Entrance Ramp	960	314	329	No
Franklin Street NB Entrance Ramp	960	412	297	No
Main Street SB Entrance Ramp	960	415	448	No

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 53 (November 2014).
NB = northbound
SB = southbound
VPH = vehicles per hour

Freeway Weave-Merge

Table 2.7.P summarizes the opening year (2032) a.m. and p.m. peak hour freeway weave-merge LOS between Main Street and Franklin Road and Franklin Road and Railroad Canyon Road under Alternative 2. As identified in Table 2.7.P, all freeway weave-merges are projected to operate at LOS D or better during the a.m. and p.m. peak hours.

Table 2.7.P: 2032 Freeway Weave-Merge Levels of Service, Alternative 2-Phase 2

Freeway Segment	Weave Distance (ft)	Peak Hour Level of Service	
		A.M.	P.M.
Southbound			
Main Street Entrance Ramp to Franklin Street Exit Ramp	2,000	B	D
Franklin Street Entrance Ramp to Railroad Canyon Road Exit Ramp	2,260	C	D
Railroad Canyon Road Entrance Ramp to Bundy Canyon Exit Ramp	12,590	See Ramp Merge-Diverge LOS (weave length greater than 2,500 ft)	
Northbound			
Bundy Canyon Entrance Ramp to Grape Street-Railroad Canyon Road Exit Ramp	11,820	See Ramp Merge-Diverge LOS (weave length greater than 2,500 ft)	
Grape Street-Railroad Canyon Road Entrance Ramp to Franklin Street Exit Ramp	2,700	See Ramp Merge-Diverge LOS (weave length greater than 2,500 ft)	
Franklin Street Entrance Ramp to Main Street Exit Ramp	2,005	C	C

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 33 (November 2014).
ft = foot/feet
LOS = level of service

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET DESIGN YEAR (2040) ANALYSIS.

Freeway Mainline

Table 2.7.Q identifies the LOS for I-15 mainline segments in design year (2040) conditions under Alternative 2. As Table 2.7.Q indicates, during the a.m. peak hour, the northbound and southbound freeway segments in the study area are projected to operate at LOS C. During the p.m. peak hour, all freeway segments are projected to operate at LOS D or better.

Table 2.7.Q: 2040 Mainline/Intersection/Freeway Ramp Levels of Service, Alternative 2-Phase 2

Freeway Segment/Intersection/Ramp Junction	Level of Service	
	A.M. Peak Hour	P.M. Peak Hour
I-15 Mainline Segment		
Southbound		
I-15 (Bundy Canyon Road to Railroad Canyon Road)	C	D
I-15 (Railroad Canyon Road to Franklin Street)	C	D
I-15 (Franklin Street to Main Street)	C	D
Northbound		
I-15 (Bundy Canyon Road to Railroad Canyon Road)	C	D
I-15 (Railroad Canyon Road to Franklin Street)	C	C
I-15 (Franklin Street to Main Street)	C	C
Intersection		
Franklin Street/Avenue 6/Auto Center Drive	C	C
Franklin Street/SB Ramps	B	B
Franklin Street/NB Ramps	B	A
Franklin Street at Camino Del Norte	A	A
Diamond Drive-Railroad Canyon Road/Mission Trail-Lake Shore Drive	C	C
Diamond Drive-Railroad Canyon Road/Casino Road-Auto Center Drive	B	B
Railroad Canyon Road/I-15 SB Ramps	B	B
Railroad Canyon Road/I-15 NB Ramps	D	D
Railroad Canyon Road/Grape Street-Summerhill Drive	C	E
Main Street/I-15 SB Ramps (Stop Condition)	B	D
Main Street/I-15 NB Ramps (Stop Condition)	C	B
Main Street/Camino Del Norte (Stop Condition)	B	C
Ramp Junction		
Southbound		
Main Street Entrance Ramp	C	D
Franklin Street Exit Ramp	C	D
Franklin Street Entrance Ramp	C	C
Railroad Canyon Road Exit Ramp	E	E
Railroad Canyon Road Entrance Ramp	C	D
Bundy Canyon Road Exit Ramp	C	F
Northbound		
Bundy Canyon Road Entrance Ramp	D	D
Railroad Canyon Road Exit Ramp	C	C
Railroad Canyon Road Entrance Ramp	D	D
Franklin Street Exit Ramp	C	C
Franklin Street Entrance Ramp	D	D

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 23, Table 13, and Table 32 (November 2014).
I-15 = Interstate 15
NB = northbound
SB = southbound

Intersection Levels of Service

Table 2.7.Q summarizes the design year (2040) a.m. and p.m. peak hour levels of service for the study intersections under Alternative 2. As identified in Table 2.7.Q, the intersections of Franklin Street (Auto Center Drive, I-15 Northbound and Southbound Ramps, and Camino Del Norte) are expected to operate at LOS C or better during the a.m. and p.m. peak hour. The Railroad Canyon Road intersections (Mission Trail-Lake Shore Drive, Casino Road-Auto Center Drive, I-15 Southbound and Northbound Ramps, and Grape Street-Summer Hill Drive) are projected to operate at LOS D or better during a.m. peak hours and LOS E or better during p.m. peak hours.

All intersections of Main Street (Camino Del Norte, I-15 northbound ramps, and I-15 southbound ramps) are projected to operate to LOS D or better during both the a.m. and p.m. peak hours.

Freeway Ramps

Table 2.7.Q summarizes the design (2040) a.m. and p.m. peak-hour LOS for the freeway ramps that would be affected by Alternative 2. As Table 2.7.Q indicates, all northbound freeway ramp junctions are projected to operate at LOS D or better during the a.m. and p.m. peak hour, and all but one of the southbound freeway ramp junctions are projected to operate at LOS E or better during the a.m. and p.m. peak hour.

Freeway Exit Ramp Queuing

Table 2.7.R summarizes the design year (2040) a.m. and p.m. peak hour queuing lengths for all exit ramps within the study area (Railroad Canyon Road Southbound Exit Ramp, Grape Street-Railroad Canyon Road Northbound Exit Ramp, the Franklin Street Southbound and Northbound Exit Ramps, and Main Street Northbound Exit Ramp) for Alternative 2. As indicated in Table 2.7.R, no queuing would occur during the a.m. or p.m. peak hour since there is adequate storage length available at the study area freeway exit ramps.

Table 2.7.R: 2040 Exit Ramp Queue Lengths, Alternative 2

Ramp Junction	Available Storage (ft)	Queuing Length (ft)		Queue Exceeds Pocket?
		A.M. Peak Hour	P.M. Peak Hour	
Railroad Canyon Road SB Exit Ramp	460	189	352	No
Grape Street-Railroad Canyon Road NB Exit Ramp	820	270	387	No
Franklin Street SB Exit Ramp	685	69	320	No
Franklin Street NB Exit Ramp	535	47	42	No
Main Street NB Exit Ramp	500	133	130	No

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 59 (November 2014).
ft = foot/feet
NB = northbound
SB = southbound

Freeway Ramp Meter Queuing Analysis

Ramp meters are planned at five entrance ramps for this alternative. Table 2.7.S summarizes the design year (2040) a.m. and p.m. peak hour queuing on the entrance ramps for Alternative 2. The analysis reveals that the Total Ramp Demand does not exceed the Total Ramp Meter Rate and that no queuing would occur during the a.m. and p.m. peak hours.

Table 2.7.S: 2040 Entrance Ramp Meter Queuing Summary, Alternative 2

Ramp Junction	Total Ramp Meter Rate (VPH)	Peak Hour		Demand Exceeds Rate?
		A.M.	P.M.	
Railroad Canyon Road SB Entrance Ramp	1,440	811	589	No
Grape Street-Railroad Canyon Road NB Entrance Ramp	1,440	1,409	1,120	No
Franklin Street SB Entrance Ramp	960	356	372	No
Franklin Street NB Entrance Ramp	960	467	337	No
Main Street SB Entrance Ramp	960	461	503	No

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 60 (November 2014).
NB = northbound
SB = southbound
VPH = vehicles per hour.

Freeway Weave-Merge

Table 2.7.T summarizes the design year (2040) a.m. and p.m. peak hour freeway weave-merge LOS between Main Street and Franklin Road and Franklin Road and Railroad Canyon Road under Alternative 2.

Table 2.7.T: 2040 Freeway Weave-Merge Levels of Service, Alternative 2

Freeway Segment	Weave Distance (ft)	Peak Hour Level of Service	
		A.M.	P.M.
Southbound			
Main Street Entrance Ramp to Franklin Street Exit Ramp	2,000	C	D
Franklin Street Entrance Ramp to Railroad Canyon Road Exit Ramp	2,260	C	E
Railroad Canyon Road Entrance Ramp to Bundy Canyon Exit Ramp	12,590	See Ramp Merge-Diverge LOS (weave length greater than 2,500 ft)	
Northbound			
Bundy Canyon Entrance Ramp to Grape Street-Railroad Canyon Road Exit Ramp	11,820	See Ramp Merge-Diverge LOS (weave length greater than 2,500 ft)	
Grape Street- Railroad Canyon Road Entrance Ramp to Franklin Street Exit Ramp	2,700	See Ramp Merge-Diverge LOS (weave length greater than 2,500 ft)	
Franklin Street Entrance Ramp to Main Street Exit Ramp	2,005	D	C

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 36 (November 2014).
ft = foot/feet
LOS = level of service

As identified in Table 2.7.T, all freeway weave-merges are projected to operate at LOS D or better during the a.m. and p.m. peak hours, with the exception of one southbound freeway segment. This southbound freeway segment is between the Franklin Street entrance ramp and the Railroad Canyon Road exit ramp and is anticipated to operate at an LOS of E during the p.m. peak hour. These conditions are not caused by or aggravated by the project, as this freeways segment is also projected to operate at unsatisfactory conditions under the No Build Alternative.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET—SUMMARY

Tables 2.7.U and 2.7.V provide a comparison of Alternative 2, compared to the No Build Alternative in opening year (2019) and design year (2040) against baseline (2013) conditions.

Table 2.7.U: 2019 Operations Improvements of Alternative 2 When Compared to the No Build Alternative and Baseline (2013) Conditions

I-15 Segment/Intersection/ Ramp Junction	A.M. Level of Service			P.M. Level of Service		
	Baseline (2013)	No Build (2019)	Alternative 2 (2019)	Baseline (2013)	No Build (2019)	Alternative 2 (2019)
I-15 Mainline Segment						
Southbound Bundy Canyon Road to Railroad Canyon Road	C	C	C	C	D	D
Southbound Railroad Canyon Road to Main Street	C	C	C	D	E	E
Northbound Bundy Canyon Road to Railroad Canyon Road	C	C	C	C	D	D
Northbound Railroad Canyon Road to Main Street	D	D	D	C	D	D
Intersection						
Franklin Street at Avenue 6-Stop Condition	B	B	B	C	C	C
Franklin Street/Auto Center Drive	A	A	A	A	A	A
Franklin Street/I-15 SB Ramps*	-	-	-	-	-	-
Franklin Street/I-15 NB Ramps*	-	-	-	-	-	-
Franklin Street Canyon View Drive-Grunder Drive	B	A	A	B	B	B
Franklin Street/Camino Del Norte-Canyon Estates Drive*	-	-	-	-	-	-
Diamond Drive- Railroad Canyon Road/Mission Trail-Lake Shore Drive	B	C	B	C	D	B
Diamond Drove-Railroad Canyon Road/Casino Road-Auto Center Drive	B	C	B	C	C	B
Railroad Canyon Road/I-15 SB Ramps	D	D	B	E	F	B
Railroad Canyon Road/I-15 NB Ramps	E	E	B	F	F	B
Railroad Canyon Road/Grape Street/Summerhill Drive	F	F	C	F	F	D
Main Street/I-15 SB Ramps	C	D	D	B	F	F
Main Street/I-15 NB Ramps	C	F	F	C	F	F
Main Street/Camino Del Norte	B	C	C	C	E	E

Table 2.7.U: 2019 Operations Improvements of Alternative 2 When Compared to the No Build Alternative and Baseline (2013) Conditions

I-15 Segment/Intersection/ Ramp Junction	A.M. Level of Service			P.M. Level of Service		
	Baseline (2013)	No Build (2019)	Alternative 2 (2019)	Baseline (2013)	No Build (2019)	Alternative 2 (2019)
Ramp Junction						
Main Street Southbound Entrance Ramp	C	D	D	D	F	F
Franklin Street Southbound Exit Ramp*	-	-	-	-	-	-
Franklin Street Southbound Entrance Ramp*	-	-	-	-	-	-
Railroad Canyon Road Southbound Exit Ramp	D	D	B	E	F	F
Railroad Canyon Road Southbound Entrance Ramp	D	D	C	D	D	D
Bundy Canyon Road Southbound Exit Ramp	D	D	D	C	E	E
Bundy Canyon Road Northbound Entrance Ramp	D	D	D	D	D	D
Railroad Canyon Road Northbound Exit Ramp	D	D	C	D	D	C
Railroad Canyon Road Northbound Entrance Ramp	D	E	D	D	D	D
Franklin Street Northbound Exit Ramp*	-	-	-	-	-	-
Franklin Street Northbound Entrance Ramp*	-	-	-	-	-	-
Main Street Northbound Exit Ramp	D	E	E	D	D	D

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 16 and 17, Table 1, 2, and 3, Table 24, 25, and 26 (November 2014).
Note: * These locations do not exist under the Baseline (2009) conditions or under the No Build Alternative. However, it is anticipated that these locations would reduce the amount of congestion on I-15 or on local streets.
I-15 = Interstate 15
NB = northbound
SB = southbound

Table 2.7.V: 2040 Operations Improvements of Alternative 2 When Compared to the No Build Alternative and Baseline (2013) Conditions

I-15 Segment/ Intersection/Ramp Junction	A.M. Level of Service			P.M. Level of Service		
	Baseline (2013)	No Build (2040)	Alternative 2 (2040)	Baseline (2013)	No Build (2040)	Alternative 2 (2040)
I-15 Mainline Segment						
Southbound Bundy Canyon Road to Casino Road-Railroad Canyon Road	C	E	C	C	F	D
Southbound Casino Road-Railroad Canyon Road to to Franklin Street*	C	E	C	D	F	D
Southbound Franklin Street to Main Street			C			D
Northbound Bundy Canyon Road to Grape Street-Railroad Canyon Road	C	E	C	C	F	D
Northbound Grape Street-Railroad Canyon Road to Franklin Street*	D	F	C	C	F	C
Northbound Franklin Street to Main Street*			C			C
Intersection						
Franklin Street/Avenue 6 (Stop Condition)	B	B	-	C	F	-
Avenue 6-Franklin Street/ Auto Center Drive	A	A	C	A	B	C
Franklin Street/I-15 SB Ramps*	-	-	B	-	-	B
Franklin Street/I-15 NB Ramps*	-	-	B	-	-	A
Franklin Street/Canyon View Drive-Grunder Drive (Stop Condition)	B	B	-	B	C	-
Franklin Street/Camino Del Norte-Canyon View Estates Drive*	-	-	A	-	-	A
Railroad Canyon Road/Mission Trail-Lake Shore Drive	B	E	C	C	F	C
Railroad Canyon Road/Casino Road-Auto Center Drive	B	E	B	C	F	B
Railroad Canyon Road/I-15 SB Ramps	D	F	B	E	F	B
Railroad Canyon Road/I-15 NB Ramps	E	F	D	F	F	D
Railroad Canyon Road/Grape Street/Summerhill Drive	F	F	C	F	F	E
Main Street/I-15 SB Ramps	C	F	B	B	F	D
Main Street/I-15 NB Ramps	C	F	C	C	F	B
Main Street/Camino Del Norte	B	F	B	C	F	C

Table 2.7.V: 2040 Operations Improvements of Alternative 2 When Compared to the No Build Alternative and Baseline (2013) Conditions

I-15 Segment/ Intersection/Ramp Junction	A.M. Level of Service			P.M. Level of Service		
	Baseline (2013)	No Build (2040)	Alternative 2 (2040)	Baseline (2013)	No Build (2040)	Alternative 2 (2040)
Ramp Junction						
Main Street Southbound Entrance Ramp	C	F	C	D	F	D
Franklin Street Southbound Exit Ramp*	-	-	C	-	-	D
Franklin Street Southbound Entrance Ramp*	-	-	C	-	-	D
Casino Road-Railroad Canyon Road Southbound Exit Ramp	D	E	E	E	F	E
Casino Road-Railroad Canyon Road Southbound Entrance Ramp	D	F	C	D	F	D
Bundy Canyon Road Southbound Exit Ramp	D	E	C	C	F	F
Bundy Canyon Road Northbound Entrance Ramp	D	F	D	D	F	D
Railroad Canyon Road Northbound Exit Ramp	D	F	C	D	F	C
Railroad Canyon Road Northbound Entrance Ramp	D	F	C	D	F	D
Franklin Street Northbound Exit Ramp*	-	-	D	-	-	D
Franklin Street Northbound Entrance Ramp*	-	-	C	-	-	C
Main Street Northbound Exit Ramp	D	F	D	D	F	D

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 16, 22 and 23, Table 1, 12, and 13, Table 24, 31, and 32 (November 2014).
Note: * These locations do not exist under the No Build Alternative. However, it is anticipated that these locations would reduce the amount of congestion on I-15 or on local streets.
I-15 = Interstate 15
NB = northbound
SB = southbound

Pedestrian Access and Bicycle Facilities

Within the project limits, existing nonstandard curb ramps would be upgraded to conform to ADA requirements. New curb ramps would meet ADA requirements. In addition, all proposed new sidewalks would meet the requirements to provide ADA access. These features would improve pedestrian access at both interchanges. Railroad Canyon Road is identified as a Class II bicycle facility. Proposed new bicycle facility features that are incorporated into the project design are consistent with the City of Lake Elsinore General Plan and would improve bicycle access in the interchange areas.

ALTERNATIVE 3-PHASE 1: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE OPENING YEAR (2019) ANALYSIS

Freeway Mainline

Table 2.7.W summarizes the opening year (2019) a.m. and p.m. peak levels of service for study area freeway segments for Alternative 3 Phase-1. During the a.m. peak hour, the northbound and southbound freeway segments in the study area are projected to operate at LOS D or better. During the p.m. peak hour, all freeway segments are projected to operate at LOS E or better.

Table 2.7.W: 2019 Mainline/Intersection/Freeway Ramp Levels of Service, Alternative 3-Phase 1

Freeway Segment/Intersection/Ramp Junction	Level of Service	
	A.M. Peak Hour	P.M. Peak Hour
I-15 Mainline Segment		
Southbound		
I-15 (Bundy Canyon Road to Railroad Canyon Road)	C	D
I-15 (Railroad Canyon Road to Main Street)	C	E
Northbound		
I-15 (Bundy Canyon Road to Railroad Canyon Road)	C	D
I-15 (Railroad Canyon Road to Main Street)	D	D
Intersection		
Franklin Street/Avenue 6 (Stop Condition)	B	C
Franklin Street/Auto Center Drive	A	A
Franklin Street at Canyon View Dr-Grunder Dr (Stop Condition)	A	B
Diamond Drive-Railroad Canyon Road/Mission Trail-Lake Shore Drive	B	B
Diamond Drive-Railroad Canyon Road/Casino Road-Auto Center Drive	B	B
Railroad Canyon Road/I-15 SB Ramps	B	B
Railroad Canyon Road/I-15 NB Ramps	B	B
Railroad Canyon Road/Grape Street-Summerhill Drive	D	F
Main Street/I-15 SB Ramps (Stop Condition)	D	F
Main Street/I-15 NB Ramps (Stop Condition)	F	F
Main Street/Camino Del Norte (Stop Condition)	C	E
Ramp Junction		
Southbound		
Main Street Entrance Ramp	D	F
Railroad Canyon Road Exit Ramp	B	F
Railroad Canyon Road Entrance Ramp	C	D
Bundy Canyon Road Exit Ramp	D	E
Northbound		
Bundy Canyon Road Entrance Ramp	D	D
Railroad Canyon Road Exit Ramp	C	C
Railroad Canyon Road Entrance Ramp	D	D
Main Street Exit Ramp	E	D

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 17, Table 4, and Table 26 (November 2014).
I-15 = Interstate 15
NB = northbound
SB = southbound

Intersection Levels of Service

Table 2.7.W summarizes the opening year (2019) a.m. and p.m. peak hour levels of service for the study intersections under Alternative 3-Phase 1. As identified in Table 2.7.W, the intersection of Railroad Canyon Road at Grape Street-Summerhill Drive is projected to improve to LOS C during the a.m. peak hours. The intersections of Railroad Canyon Road (Casino Drive-Auto Center Drive and Mission Trail-Lake Shore Drive) are projected to operate at LOS B during the a.m. and p.m. peak hours. Main Street intersections (Camino Del Norte, I-15 northbound ramps, and I-15 southbound ramps) are projected to operate at LOS C or worse during the a.m. and p.m. peak hours. All intersections of Franklin Street (Avenue 6, Auto Center Drive, and Grunder Drive-Canyon View Estates) are projected to operate at LOS C or better during the a.m. and p.m. peak hours.

Freeway Ramps

Table 2.7.W summarizes the opening year (2019) a.m. and p.m. peak hour levels of service for the Railroad Canyon/I-15, Main Street/I-15, and I-15/Bundy Canyon Road freeway ramp influence areas under Alternative 3-Phase 1. As identified in Table 2.7.W, all northbound freeway ramp junctions are projected to operate at LOS E or better during the a.m. peak hour, and the southbound freeway ramp junctions are projected to operate at LOS D or better during the a.m. peak hour. During the p.m. peak hour, all northbound ramps are projected to operate at LOS D or better.

Freeway Exit Ramp Queuing

Table 2.7.X summarizes the opening year (2019) a.m. and p.m. peak hour queuing lengths for all exit ramps (Casino Road-Railroad Canyon Road Southbound Exit Ramp, Grape Street-Railroad Canyon Northbound Exit Ramp, and the Main Street Northbound Exit Ramp) for Alternative 3-Phase 1. The analysis revealed that no ramps would experience queuing during the a.m. or p.m. peak hours.

Table 2.7.X: 2019 Queue Lengths, Alternative 3-Phase 1

Ramp Junction	Available Storage (ft)	Queuing Length (ft)		Queue Exceeds Pocket?
		A.M. Peak Hour	P.M. Peak Hour	
Casino Road-Railroad Canyon Road SB Exit Ramp	835	152	160	No
Grape Street-Railroad Canyon Road NB Exit Ramp	820	208	306	No
Main Street NB Exit Ramp (Stop Condition)	955	639	584	No

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 42 (November 2014).
ft = foot/feet
NB = northbound
SB = southbound

Freeway Ramp Meter Queuing

Ramp meters are proposed at two entrance ramps under this alternative. Table 2.7.Y summarizes the opening year (2019) a.m. and p.m. peak hour queuing on the entrance ramps. The analysis revealed the Total Ramp Demand does not exceed the Total Ramp meter Rate and that no queuing would occur during the a.m. and p.m. peak hours.

Table 2.7.Y: 2019 Entrance Ramp Meter Queuing Summary, Alternative 3-Phase 1

Intersection	Total Ramp Meter Rate (VPH)	Peak Hour A.M.	Peak Hour P.M.	Demand Exceeds Rate?
Casino Road-Railroad Canyon Road SB Entrance Ramp	1,440	757	561	No
Grape Street-Railroad Canyon Road NB Entrance Ramp	1,440	1,286	991	No

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 43 (November 2014).
NB = northbound
SB = southbound
VPH = vehicles per hour

Freeway Weave-Merge

No weaving analysis was conducted because no weaving section in the study area is less than 2,500 ft in length for the existing condition. The Bundy Canyon Road interchange ramps are located more than 12,000 ft to the south of the Railroad Canyon Road interchange ramps, and the Main Street interchange ramps are located more than 6,500 ft to the north. According to the Highway Capacity Manual, the maximum length for which a weaving analysis is conducted is 2,500 ft. Beyond this length, merge and diverge areas are considered separately using the Ramps and Ramp Junctions methodology.

ALTERNATIVE 3-PHASE 1: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE — FAILURE YEAR (2032) ANALYSIS

Freeway Mainline

Table 2.7.Z identifies the LOS for I-15 mainline segments in failure year (2032) conditions with Alternative 3-Phase 1. All but one mainline freeway segment would operate at LOS D during the a.m. peak hour, while all mainline freeway segments would operate at LOS E, with the exception of the southbound segment from Railroad Canyon Road to Main Streets, which would operate at LOS F, during p.m. peak hour.

Intersection Levels of Service

Table 2.7.Z summarizes the failure year (2032) a.m. and p.m. peak-hour LOS for the study intersections under Alternative 3-Phase 1. As identified in Table 2.7.Z, all of the Franklin Street intersections (at Avenue 6, Auto Center Drive, and Canyon View Drive-Grunder Drive), are projected to operate at LOS D or better during both the a.m. and p.m. peak hour. Four of the five of the Railroad Canyon Road intersections are projected to operate at LOS C or better during the a.m. and p.m. peak hour. All three of the Main Street intersections are projected to operate LOS F during the a.m. and p.m. peak period.

Freeway Ramps

Table 2.7.Z summarizes the failure year (2032) a.m. and p.m. peak hour levels of service for the Railroad Canyon/I-15 and Main Street/I-15 freeway ramp influence areas under Alternative 3-Phase 1. As identified in Table 2.7.Z, all southbound freeway ramp junctions are projected to operate at LOS F during the p.m. peak hour. During the a.m. peak hour, five of the eight ramp junctions are projected to operate at LOS E or worse.

Table 2.7.Z: 2032 Mainline/Intersection/Freeway Ramp Levels of Service, Alternative 3-Phase 1

Freeway Segment/Intersection/Ramp Junction	Level of Service	
	A.M. Peak Hour	P.M. Peak Hour
I-15 Mainline Segment		
Southbound		
I-15 (Bundy Canyon Road to Railroad Canyon Road)	D	E
I-15 (Railroad Canyon Road to Main Street)	D	F
Northbound		
I-15 (Bundy Canyon Road to Railroad Canyon Road)	D	E
I-15 (Railroad Canyon Road to Main Street)	F	E
Intersection		
Franklin Street/Avenue 6 (Stop Condition)	B	D
Franklin Street/Auto Center Drive	A	A
Franklin Street at Canyon View Dr-Grunder Dr (Stop Condition)	B	B
Diamond Drive-Railroad Canyon Road/Mission Trail-Lake Shore Drive	C	C
Diamond Drive-Railroad Canyon Road/Casino Road-Auto Center Drive	C	C
Railroad Canyon Road/I-15 SB Ramps	B	C
Railroad Canyon Road/I-15 NB Ramps	B	C
Railroad Canyon Road/Grape Street-Summerhill Drive	E	F
Main Street/I-15 SB Ramps (Stop Condition)	F	F
Main Street/I-15 NB Ramps (Stop Condition)	F	F
Main Street/Camino Del Norte (Stop Condition)	F	F
Ramp Junction		
Southbound		
Main Street Entrance Ramp	E	F
Railroad Canyon Road Exit Ramp	C	F
Railroad Canyon Road Entrance Ramp	D	F
Bundy Canyon Road Exit Ramp	E	F
Northbound		
Bundy Canyon Road Entrance Ramp	E	F
Railroad Canyon Road Exit Ramp	C	D
Railroad Canyon Road Entrance Ramp	F	F
Main Street Exit Ramp	F	E

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 18, Table 7, and Table 27 (November 2014).
I-15 = Interstate 15
NB = northbound
SB = southbound

Freeway Exit Ramp Queuing

Table 2.7.AA summarizes the failure year (2032) a.m. and p.m. peak hour queuing lengths for all exit ramps (Casino Road-Railroad Canyon Road Southbound Exit Ramp, Grape Street-Railroad Canyon Northbound Exit Ramp, and the Franklin Street Southbound and Northbound Exit Ramps). The analysis revealed that queuing would occur on the Main Street Northbound Exit Ramp during the a.m. and p.m. peak hour.

Table 2.7.AA: 2032 Queue Lengths, Alternative 3-Phase 1

Ramp Junction	Available Storage (ft)	Queuing Length (ft)		Queue Exceeds Pocket?
		A.M. Peak Hour	P.M. Peak Hour	
Casino Road-Railroad Canyon Road SB Exit Ramp	835	197	540	No
Grape Street-Railroad Canyon Road NB Exit Ramp	820	298	476	No
Main Street NB Exit Ramp (Stop Condition)	955	2066	1525	Yes

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 48 (November 2014).
ft = foot/feet
NB = northbound
SB = southbound

Freeway Entrance Ramp Metering Queuing

Ramp meters are proposed at two entrance ramps under Alternative 3-Phase 1. Table 2.7.AB summarizes the failure year (2032) a.m. and p.m. peak hour queuing on the entrance ramps. Based on these data, the Total Ramp Demand only exceeds the Total Ramp Meter Rate for the Grape Street-Railroad Canyon Road Northbound Entrance Ramp during the a.m. peak hour.

Table 2.7.AB: 2032 Entrance Ramp Meter Queuing Summary, Alternative 3-Phase 1

Ramp Junction	Total Ramp Meter Rate (VPH)	Peak Hour		Demand Exceeds Rate?
		A.M.	P.M.	
Casino Road-Railroad Canyon Road SB Entrance Ramp	1,440	995	708	No
Grape Street-Railroad Canyon Road NB Entrance Ramp	1,440	1,662	1,250	Yes-A.M., No-P.M.

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 49 (November 2014).
NB = northbound
SB = southbound
VPH = vehicles per hour

Freeway Weave-Merge

No weaving analysis was conducted because no weaving section in the study area is less than 2,500 ft in length for the existing condition. The Bundy Canyon Road interchange ramps are located more than 12,000 ft to the south of the Railroad Canyon Road interchange ramps, and the Main Street interchange ramps are located more than 6,500 ft to the north. According to the Highway Capacity Manual, the maximum length for which a weaving analysis is conducted is 2,500 ft. Beyond this length, merge and diverge areas are considered separately using the Ramps and Ramp Junctions methodology.

ALTERNATIVE 3-PHASE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE — OPENING YEAR (2032) ANALYSIS

Freeway Mainline

Table 2.7.AC provides the LOS for each mainline I-15 segment in the opening year (2032) with the Alternative 3-Phase 2 improvements. As Table 2.7.AC indicates, during the a.m. and p.m. peak hour, the northbound and southbound freeway segments in the study area are projected to operate at LOS C or better.

Table 2.7.AC: 2032 Mainline/Intersection/Freeway Ramp Levels of Service, Alternative 3-Phase 2

Freeway Segment/Intersection/Ramp Junction	Level of Service	
	A.M. Peak Hour	P.M. Peak Hour
I-15 Mainline Segment		
Southbound		
I-15 (Bundy Canyon Road to Railroad Canyon Road)	C	C
I-15 (Railroad Canyon Road to Main Street)	B	C
I-15 (Franklin Street to Main Street)	B	C
Northbound		
I-15 (Bundy Canyon Road to Railroad Canyon Road)	C	C
I-15 (Railroad Canyon Road to Main Street)	C	C
I-15 (Franklin Street to Main Street)	C	C
Intersection		
Franklin Street/Avenue 6/Auto Center Drive	C	C
Franklin Street/SB Ramps	B	B
Franklin Street/NB Ramps	B	A
Franklin Street at Camino Del Norte	A	A
Diamond Drive-Railroad Canyon Road/Mission Trail-Lake Shore Drive	B	B
Diamond Drive-Railroad Canyon Road/Casino Road-Auto Center Drive	B	B
Railroad Canyon Road/I-15 SB Ramps	A	B
Railroad Canyon Road/I-15 NB Ramps	B	B
Railroad Canyon Road/Grape Street-Summerhill Drive	C	D
Main Street/I-15 SB Ramps (Stop Condition)	B	C
Main Street/I-15 NB Ramps (Stop Condition)	C	C
Main Street/Camino Del Norte (Stop Condition)	B	C
Ramp Junction		
Southbound		
Main Street Entrance Ramp	C	C
Franklin Street Exit Ramp	D	D
Franklin Street Entrance Ramp	C	C
Railroad Canyon Road Exit Ramp	C	E
Railroad Canyon Road Entrance Ramp	C	C
Bundy Canyon Road Exit Ramp	B	C
Northbound		
Bundy Canyon Road Entrance Ramp	C	C
Railroad Canyon Road Exit Ramp	B	C
Railroad Canyon Road Entrance Ramp	D	C
Franklin Street Exit Ramp	C	C
Franklin Street Entrance Ramp	C	C
Main Street Exit Ramp	D	C

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 20, Table 10, and Table 29 (November 2014).
I-15 = Interstate 15
NB = northbound
SB = southbound

Intersection Levels of Service

Table 2.7.AC summarizes the opening year (2032) a.m. and p.m. peak-hour level of service for the study intersections under Alternative 3-Phase 2.

As identified in Table 2.7.AC, all of the Franklin Street intersections (at Auto Center Drive, Southbound and Northbound Ramps, and Camino Del Norte), are projected to operate at LOS C or better during both the a.m. and p.m. peak periods. Four of the five Railroad Canyon Road intersections (at Mission Trail-Lake Shore Drive, Casino Road-Auto Center Drive, I-15 Southbound and Northbound Ramps, and Grape Street-Summerhill Drive) are projected to operate at LOS B or better during the a.m. and p.m. peak hours. All three of the Main Street intersections (at the Southbound and Northbound Ramps, and Camino Del Norte) are projected to operate LOS C or better during the a.m. and p.m. peak periods.

Freeway Ramps

Table 2.7.AC summarizes the opening year (2032) a.m. and p.m. peak hour levels of service for the Railroad Canyon/I-15 and Main Street/I-15 freeway ramp influence areas under Alternative 3-Phase 2. As identified in Table 2.7.AC, all but one southbound freeway ramp junctions are projected to operate at LOS D or better during the a.m. and p.m. peak hour. All of the northbound freeway ramp junctions are projected to operate at LOS D or better during both the a.m. and p.m. peak hour.

Freeway Exit Ramp Queuing

Table 2.7.AD summarizes the future year (2032) a.m. and p.m. peak hour queuing lengths for five exit ramps (Casino Road-Railroad Canyon Road Southbound Exit Ramp, Grape Street-Railroad Canyon Northbound Exit Ramp, the Franklin Street Southbound and Northbound Exit Ramps, and the Main Street Northbound Exit Ramp) under Alternative 3-Phase 2. The analysis revealed that no queuing would occur during the a.m. or p.m. peak hour.

Table 2.7.AD: 2032 Queue Lengths, Alternative 3-Phase 2

Ramp Junction	Available Storage (ft)	Queuing Length (ft)		Queue Exceeds Pocket?
		A.M. Peak Hour	P.M. Peak Hour	
Casino Road-Railroad Canyon Road SB Exit Ramp	835	107	134	No
Grape Street-Railroad Canyon Road NB Exit Ramp	820	150	212	No
Franklin Street SB Exit Ramp	685	102	223	No
Franklin Street NB Exit Ramp	535	82	62	No
Main Street NB Exit Ramp	500	298	308	No

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 54 (November 2014).
ft = foot/feet
NB = northbound
SB = southbound

Freeway Entrance Ramp Metering Queuing

Ramp meters are proposed at five entrance ramps under Alternative 3-Phase 2. Table 2.7.AE summarizes the opening year (2032) a.m. and p.m. peak hour queuing on the entrance ramps. Based on these data, the Total Ramp Demand does not exceed the Total Ramp Meter Rate. Therefore, no queuing would occur during the a.m. and p.m. peak hours.

Table 2.7.AE: 2032 Entrance Ramp Meter Queuing Summary, Alternative 3-Phase 2

Ramp Junction	Total Ramp Meter Rate (VPH)	Peak Hour		Demand Exceeds Rate?
		A.M.	P.M.	
Casino Road-Railroad Canyon Road SB Entrance Ramp	1,440	721	524	No
Grape Street-Railroad Canyon Road NB Entrance Ramp	1,440	1,253	966	No
Franklin Street SB Entrance Ramp	960	314	329	No
Franklin Street NB Entrance Ramp	960	412	297	No
Main Street SB Entrance Ramp	960	415	448	No

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 55 (November 2014).
NB = northbound
SB = southbound
VPH = vehicles per hour

Freeway Weave-Merge

Table 2.7.AF summarizes the opening year (2032) a.m. and p.m. peak hour freeway weave-merge LOS between Main Street and Franklin Road and Franklin Road and Railroad Canyon Road under Alternative 3-Phase 2. As Table 2.7.AF indicates, both the southbound and northbound freeway weave-merges are projected to operate at LOS D or better during the a.m. and p.m. peak hours.

Table 2.7.AF: 2032 Freeway Weave-Merge Levels of Service, Alternative 3-Phase 2

Freeway Segment	Weave Distance (ft)	Peak Hour Level of Service	
		A.M.	P.M.
I-15 Southbound			
Main Street Entrance Ramp to Franklin Street Exit Ramp	2,000	B	D
Franklin Street Entrance Ramp to Casino Road-Railroad Canyon Road Exit Ramp	4,020	See Ramp Merge-Diverge LOS (weave length greater than 2,500 ft)	
Casino Road-Railroad Canyon Road Entrance Ramp to Bundy Canyon Exit Ramp	11,680	See Ramp Merge-Diverge LOS (weave length greater than 2,500 ft)	
I-15 Northbound			
Bundy Canyon Entrance Ramp to Grape Street-Railroad Canyon Road Exit Ramp	11,820	See Ramp Merge-Diverge LOS (weave length greater than 2,500 ft)	
Grape Street-Railroad Canyon Road Entrance Ramp to Franklin Street Exit Ramp	2,700	See Ramp Merge-Diverge LOS (weave length greater than 2,500 ft)	
Franklin Street Entrance Ramp to Main Street Exit Ramp	2,005	C	C

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 34 (November 2014).
ft = foot/feet
I-15 = interstate 15
LOS = level of service

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE—DESIGN YEAR (2040) ANALYSIS.

Freeway Mainline

Table 2.7.AG provides LOS for each mainline I-15 segment in design year (2040) with the Alternative 3 improvements. As Table 2.7.AG indicates, during the a.m. peak hour, the northbound and southbound freeway segments in the study area are projected to operate at LOS C. During the p.m. peak hour, all freeway segments are projected to operate at LOS D or better.

Intersection Levels of Service

Table 2.7.AG summarizes the design year (2040) a.m. and p.m. peak-hour level of service for the study intersections under Alternative 3. As identified in Table 2.7.AG, the intersections of Railroad Canyon Road at Grape Street-Summerhill Drive improve to LOS C during the a.m. peak hour. The intersections of Railroad Canyon Road (Casino Drive-Auto Center Drive and Mission Trail-Lake Shore Drive) are projected to operate at LOS B or better in the a.m. peak hour and at LOS C or better in the p.m. peak hour.

All intersections of Main Street (Camino Del Norte, I-15 northbound ramps, and I-15 southbound ramps) are projected to operate to LOS C or better during the a.m. and LOS D or better during the p.m. peak hours. All intersections of Franklin Street (1-15 southbound ramps, I-15 northbound ramps, and Camino Del Norte-Canyon Estates Drive) are projected to operate at LOS of B or better during the a.m. and p.m. peak hours.

Freeway Ramps

Table 2.7.AG summarizes the design year (2040) a.m. and p.m. peak-hour level of service for the freeway ramps that would be affected by Alternative 3. As Table 2.7.AG indicates, all northbound freeway ramp junctions are projected to operate at LOS D or better during the a.m. and p.m. peak hour, and the southbound freeway ramp junctions except one are projected to operate at LOS E or better during the a.m. and p.m. peak hour.

Freeway Exit Ramp Queuing

Table 2.7.AH summarizes the design year (2040) a.m. and p.m. peak hour queuing lengths for all exit ramps (Casino Road-Railroad Canyon Road Southbound Exit Ramp, Grape Street-Railroad Canyon Northbound Exit Ramp, the Franklin Street Southbound and Northbound Exit Ramps, and the Main Street Northbound Exit Ramps) under Alternative 3. The analysis revealed that no queuing would occur during the a.m. or p.m. peak hour.

Freeway Ramp Meter Queuing Analysis

Ramp meters are proposed at five entrance ramps under Alternative 3. Table 2.7.AI summarizes the design year (2040) a.m. and p.m. peak hour queuing on the entrance ramps for Alternative 3. Based on these data, the Total Ramp Demand does not exceed the Total Ramp Meter Rate. Therefore, no queuing would occur during the a.m. and p.m. peak hours.

Freeway Weave-Merge Analysis

Table 2.7.AJ summarizes the design year (2040) a.m. and p.m. peak hour freeway weave-merge level of service between Main Street and Franklin Road and Franklin Road and Railroad Canyon Road under Alternative 3. As Table 2.7.AJ indicates, both the southbound and northbound freeway weave-merges are projected to operate at LOS D or better during the a.m. and p.m. peak hours.

Table 2.7.AG: 2040 Mainline/Intersection/Freeway Ramp Levels of Service, Alternative 3

Freeway Segment/Intersection/Ramp Junction	Level of Service	
	A.M. Peak Hour	P.M. Peak Hour
I-15 Mainline Segment		
Southbound		
I-15 (Bundy Canyon Road to Railroad Canyon Road)	C	D
I-15 (Railroad Canyon Road to Main Street)	C	D
I-15 (Franklin Street to Main Street)	C	D
Northbound		
I-15 (Bundy Canyon Road to Railroad Canyon Road)	C	D
I-15 (Railroad Canyon Road to Main Street)	C	C
I-15 (Franklin Street to Main Street)	C	C
Intersection		
Franklin Street/Avenue 6/Auto Center Drive	C	C
Franklin Street/SB Ramps	B	B
Franklin Street/NB Ramps	B	A
Franklin Street at Camino Del Norte	A	A
Diamond Drive-Railroad Canyon Road/Mission Trail-Lake Shore Drive	B	C
Diamond Drive-Railroad Canyon Road/Casino Road-Auto Center Drive	B	B
Railroad Canyon Road/I-15 SB Ramps	A	C
Railroad Canyon Road/I-15 NB Ramps	B	B
Railroad Canyon Road/Grape Street-Summerhill Drive	C	E
Main Street/I-15 SB Ramps	B	D
Main Street/I-15 NB Ramps	C	B
Main Street/Camino Del Norte	B	C
Ramp Junction		
Southbound		
Main Street Entrance Ramp	C	D
Franklin Street Exit Ramp	C	D
Franklin Street Entrance Ramp	C	D
Railroad Canyon Road Exit Ramp	E	E
Railroad Canyon Road Entrance Ramp	C	D
Bundy Canyon Road Exit Ramp	C	F
Northbound		
Bundy Canyon Road Entrance Ramp	D	D
Railroad Canyon Road Exit Ramp	C	C
Railroad Canyon Road Entrance Ramp	C	D
Franklin Street Exit Ramp	D	D
Franklin Street Entrance Ramp	C	C
Main Street Exit Ramp	D	D

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 23, Table 14, and Table 32 (November 2014).
I-15 = Interstate 15
NB = northbound
SB = southbound

Table 2.7.AH: 2040 Queue Lengths, Alternative 3

Ramp Junction	Available Storage (ft)	Queuing Length (ft) A.M. Peak Hour	Queuing Length (ft) P.M. Peak Hour	Queue Exceeds Pocket?
Casino Road-Railroad Canyon Road SB Exit Ramp	835	138	318	No
Grape Street-Railroad Canyon Road NB Exit Ramp	820	232	319	No
Franklin Street SB Exit Ramp	685	69	320	No
Franklin Street NB Exit Ramp	535	47	42	No
Main Street NB Exit Ramp	500	133	130	No

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 61 (November 2014).
ft = foot/feet SB = southbound
NB = northbound

Table 2.7.AI: 2040 Entrance Ramp Meter Queuing Summary, Alternative 3

Ramp Junction	Total Ramp Meter Rate (VPH)	Peak Hour A.M.	Peak Hour P.M.	Demand Exceeds Rate?
Casino Road-Railroad Canyon Road SB Entrance Ramp	1,440	811	589	No
Grape Street-Railroad Canyon Road NB Entrance Ramp	1,440	1,409	1,120	No
Franklin Street SB Entrance Ramp	960	356	372	No
Franklin Street NB Entrance Ramp	960	467	337	No
Main Street SB Entrance Ramp	960	461	503	No

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 62 (November 2014).
NB = northbound VPH = vehicles per hour
SB = southbound

Table 2.7.AJ: 2040 Freeway Weave-Merge Levels of Service, Alternative 3

Freeway Segment	Weave Distance (ft)	Peak Hour Level of Service A.M.	Peak Hour Level of Service P.M.
Southbound			
(I-15) Main Street Entrance Ramp to Franklin Street Exit Ramp	2,000	C	D
(I-15) Franklin Street Entrance Ramp to Casino Road-Railroad Canyon Road Exit Ramp	4,020	See Ramp Merge-Diverge LOS (weave length greater than 2,500 ft)	
(I-15) Casino Road-Railroad Canyon Road Entrance Ramp to Bundy Canyon Exit Ramp	11,680	See Ramp Merge-Diverge LOS (weave length greater than 2,500 ft)	
Northbound			
(I-15) Bundy Canyon Entrance Ramp to Grape Street- Railroad Canyon Road Exit Ramp	11,820	See Ramp Merge-Diverge LOS (weave length greater than 2,500 ft)	
(I-15) Grape Street-Railroad Canyon Road Entrance Ramp to Franklin Street Exit Ramp	2,700	See Ramp Merge-Diverge LOS (weave length greater than 2,500 ft)	
(I-15)Franklin Street Entrance Ramp to Main Street Exit Ramp	2,005	D	D

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 37 (November 2014).
ft = foot/feet LOS = level of service

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE—SUMMARY

Table 2.7.AK and Table 2.7.AL provide a comparison of Alternative 3, the No Build Alternative in opening year (2019) and future year (2040) against baseline (2013) conditions.

Table 2.7.AK: 2019 Operations Improvements of Alternative 3 When Compared to the No Build Alternative and Baseline (2013) Conditions

I-15 Segment/ Intersection/Ramp Junction	A.M. Level of Service			P.M. Level of Service		
	Baseline (2013)	No Build (2019)	Alternative 3 (2019)	Baseline (2013)	No Build (2019)	Alternative 3 (2019)
I-15 Mainline Segment						
Southbound Bundy Canyon Road to Railroad Canyon Road	C	C	C	C	D	D
Soutbound Railroad Canyon Road to Main Street	C	C	C	D	E	E
Northbound Bundy Canyn Road to Railroad Canyon Road	C	C	C	C	D	D
Northbound Railroad Canyon Road to Main Street	D	D	D	C	D	D
Intersection						
Franklin Street at Avenue 6-Stop Condition	B	B	B	C	C	C
Avenue 6-Franklin Street/Auto Center Drive	A	A	A	A	A	A
Franklin Street/I-15 SB Ramps*	—	—	—	—	—	—
Franklin Street/I-15 NB Ramps*	—	—	—	—	—	—
Franklin Street Canyon View Drive-Grunder Drive	B	A	A	B	B	B
Franklin Street/Camino Del Norte-Canyon Estates Drive*	—	—	—	—	—	—
Railroad Canyon Road/Mission Trail-Lake Shore Drive	B	C	B	C	D	B
Railroad Canyon Road/Casino Road-Auto Center Drive	B	C	B	C	C	B
Railroad Canyon Road/I-15 SB Ramps	D	D	B	E	F	B
Railroad Canyon Road/I-15 NB Ramps	E	E	B	F	F	B
Railroad Canyon Road/Grape Street/Summerhill Drive	F	F	C	F	F	D
Main Street/I-15 SB Ramps	C	D	D	B	F	F
Main Street/I-15 NB Ramps	C	F	F	C	F	F
Main Street/Camino Del Norte	B	C	C	C	E	E
Ramp Junction						
Main Street Southbound Entrance Ramp	C	D	D	D	F	F
Franklin Street Southbound Exit Ramp*	-	-	-	-	-	-
Franklin Street Southbound Entrance Ramp*	-	-	-	-	-	-
Railroad Canyon Road Southbound Exit Ramp	D	D	B	E	F	F
Railroad Canyon Road Southbound Entrance Ramp	D	D	C	D	D	D
Bundy Canyon Rounad Southbound Exit Ramp	D	D	D	C	E	E
Bundy Canyon Road Northbound Entrance Ramp	D	D	D	D	D	D
Railroad Canyon Road Northbound Exit Ramp	D	D	C	D	D	C

Table 2.7.AK: 2019 Operations Improvements of Alternative 3 When Compared to the No Build Alternative and Baseline (2013) Conditions

I-15 Segment/ Intersection/Ramp Junction	A.M. Level of Service			P.M. Level of Service		
	Baseline (2013)	No Build (2019)	Alternative 3 (2019)	Baseline (2013)	No Build (2019)	Alternative 3 (2019)
Railroad Canyon Road Northbound Entrance Ramp	D	E	D	D	D	D
Franklin Street Northbound Exit Ramp*	-	-	-	-	-	-
Franklin Street Northbound Entrance Ramp*	-	-	-	-	-	-
Main Street Northbound Exit Ramp	D	E	E	D	D	D

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 16 and 17, Table 1, 2, and 4, Table 24, 25 and 26 (November 2014).
Note: * These locations do not exist under the No Build Alternative. However, it is anticipated that these locations would reduce the amount of congestion on I-15 or on local streets.
I-15 = Interstate 15
NB = northbound
SB = southbound

Table 2.7.AL: 2040 Operations Improvements of Alternative 3 When Compared to the No Build Alternative and Baseline (2013) Conditions

I-15 Segment/ Intersection/Ramp Junction	A.M. Level of Service			P.M. Level of Service		
	Baseline (2013)	No Build (2040)	Alternative 3 (2040)	Baseline (2013)	No Build (2040)	Alternative 3 (2040)
I-15 Mainline Segment						
Southbound Bundy Canyon Road to Casino Road-Railroad Canyon Road	C	E	C	C	F	D
Southbound Casino Road-Railroad Canyon Road to to Franklin Street*	C	E	C	D	F	D
Southbound Franklin Street to Main Street			C			D
Northbound Bundy Canyon Road to Grape Street-Railroad Canyon Road	C	E	C	C	F	D
Northbound Grape Street-Railroad Canyon Road to Franklin Street*	D	F	C	C	F	C
Northbound Franklin Street to Main Street*			C			C
Intersection						
Franklin Street-Avenue 6 (Stop Condition)	B	B	-	C	F	-
Avenue 6-Franklin Street/Auto Center Drive	A	A	C	A	B	C
Franklin Street/I-15 SB Ramps*	-	-	B	-	-	B
Franklin Street/I-15 NB Ramps*	-	-	B	-	-	A
Franklin Street/Canyon View Drive-Grunder Drive (Stop Condition)	B	B	-	B	C	-
Franklin Street/Camino Del Norte-Canyon Estates Drive*	-	-	A	-	-	A

Table 2.7.AL: 2040 Operations Improvements of Alternative 3 When Compared to the No Build Alternative and Baseline (2013) Conditions

I-15 Segment/ Intersection/Ramp Junction	A.M. Level of Service			P.M. Level of Service		
	Baseline (2013)	No Build (2040)	Alternative 3 (2040)	Baseline (2013)	No Build (2040)	Alternative 3 (2040)
Railroad Canyon Road/Mission Trail-Lake Shore Drive	B	E	B	C	F	C
Railroad Canyon Road/Casino Road-Auto Center Drive	B	E	B	C	F	B
Railroad Canyon Road/I-15 SB Ramps	D	F	A	E	F	C
Railroad Canyon Road/I-15 NB Ramps	E	F	B	F	F	B
Railroad Canyon Road/Grape Street/Summerhill Drive	F	F	C	F	F	E
Main Street/I-15 SB Ramps	C	F	B	B	F	D
Main Street/I-15 NB Ramps	C	F	C	C	F	B
Main Street/Camino Del Norte	B	F	B	C	F	C
Ramp Junction						
Main Street Southbound Entrance Ramp	C	F	C	D	F	D
Franklin Street Southbound Exit Ramp*	-	-	C	-	-	D
Franklin Street Southbound Entrance Ramp*	-	-	C	-	-	D
Casino Road-Railroad Canyon Road Southbound Exit Ramp	D	E	E	E	F	E
Railroad Canyon Road Southbound Entrance Ramp	D	F	C	D	F	D
Bundy Canyon Road Southbound Exit Ramp	D	E	C	C	F	F
Bundy Canyon Road Northbound Exit Ramp	D	F	D	D	F	D
Railroad Canyon Road Northbound Exit Ramp	D	F	C	D	F	C
Railroad Canyon Road Northbound Entrance Ramp	D	F	C	D	F	D
Franklin Street Northbound Exit Ramp*	-	-	D	-	-	D
Franklin Street Northbound Entrance Ramp*	-	-	C	-	-	C
Main Street Northbound Exit Ramp	D	F	D	D	F	D

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 16, 22, and 23, Table 1, 12, and 14, Table 24, 31 and 32 (November 2014).
Note: * These locations do not exist under the No Build Alternative. However, it is anticipated that these locations would reduce the amount of congestion on I-15 or on local streets.
I-15 = Interstate 15
NB = northbound
SB = southbound

Pedestrian Access and Bicycle Facilities

Within the project limits, existing nonstandard curb ramps would be upgraded to conform to ADA requirements. New curb ramps would meet ADA requirements. In addition, any new sidewalks that are proposed would be designed per ADA standards and requirements. These features would improve pedestrian access at both interchanges. Railroad Canyon Road is identified as a Class II bicycle facility. Any new bicycle facility features proposed would also be incorporated into the project design. This would be consistent with the City of Lake Elsinore General Plan and would improve bicycle access in the interchange areas.

ALTERNATIVE 4-PHASE 1: ROUNDABOUT ALTERNATIVE OPENING YEAR (2019) ANALYSIS

Freeway Mainline

Table 2.7.AM summarizes the opening year (2019) a.m. and p.m. peak hour levels of service for study area freeway segments for Alternative 4-Phase 1. During the a.m. peak hour, the northbound and southbound freeway segments in the study area are projected to operate at LOS D or better. During the p.m. peak hour, all freeway segments are projected to operate at LOS E or better.

Intersection Levels of Service

Table 2.7.AM summarizes the opening year (2019) a.m. and p.m. peak hour levels of service for the study intersections under Alternative 4-Phase 1. As identified in Table 2.7.AM, the intersection of Railroad Canyon Road at Grape Street-Summerhill Drive is projected to improve to LOS B or better during the a.m. and p.m. peak hours. The intersections of Railroad Canyon Road (Casino Drive-Auto Center Drive and Mission Trail-Lake Shore Drive) are projected to operate at LOS B or better during the a.m. and p.m. peak hours. Main Street intersections (Camino Del Norte, I-15 northbound ramps, and I-15 southbound ramps) are projected to operate at LOS D or worse during the a.m. and p.m. peak hours. All intersections of Franklin Street (Avenue 6, Auto Center Drive, and Grunder Drive-Canyon View Estates) are projected to operate at LOS C or better during the a.m. and p.m. peak hours.

Freeway Ramps

Table 2.7.AM summarizes the opening year (2019) a.m. and p.m. peak hour levels of service for the Railroad Canyon/I-15, Main Street/I-15, and I-15/Bundy Canyon Road freeway ramp influence areas under Alternative 4-Phase 1. As identified in Table 2.7.AM, all northbound freeway ramp junctions are projected to operate at LOS E or better during the a.m. peak hour, and the southbound freeway ramp junctions are projected to operate at LOS D or better during the a.m. peak hour. During the p.m. peak hour, all northbound ramps are projected to operate at LOS D or better.

Freeway Exit Ramp Queuing

Table 2.7.AN summarizes the opening year (2019) a.m. and p.m. peak hour queuing lengths for all exit ramps (Railroad Canyon Road Northbound and Southbound Exit Ramps and Main Street Northbound Exit Ramp) for Alternative 4-Phase 1. The analysis revealed that no queuing would occur during the a.m. and p.m. peak periods.

Table 2.7.AM: 2019 Mainline/Intersection/Freeway Ramp Levels of Service, Alternative 4-Phase 1

Freeway Segment/Intersection/Ramp Junction	Level of Service	
	A.M. Peak Hour	**P.M. Peak Hour**
I-15 Mainline Segment		
Southbound		
I-15 (Bundy Canyon Road to Railroad Canyon Road)	C	D
I-15 (Railroad Canyon Road to Main Street)	C	E
Northbound		
I-15 (Bundy Canyon Road to Railroad Canyon Road)	C	D
I-15 (Railroad Canyon Road to Main Street)	D	D
Intersection		
Franklin Street/Avenue 6 (Stop Condition)	B	C
Franklin Street/Auto Center Drive	A	A
Franklin Street at Canyon View Dr-Grunder Dr (Stop Condition)	A	B
Diamond Drive-Railroad Canyon Road/Mission Trail-Lake Shore Drive	A	B
Diamond Drive-Railroad Canyon Road/Casino Road-Auto Center Drive	A	A
Railroad Canyon Road/I-15 SB Ramps	B	A
Railroad Canyon Road/I-15 NB Ramps	A	A
Railroad Canyon Road/Grape Street-Summerhill Drive	A	B
Main Street/I-15 SB Ramps (Stop Condition)	D	F
Main Street/I-15 NB Ramps (Stop Condition)	F	F
Main Street/Camino Del Norte (Stop Condition)	C	E
Ramp Junction		
Southbound		
Main Street Entrance Ramp	D	F
Railroad Canyon Road Exit Ramp	B	F
Railroad Canyon Road Entrance Ramp	C	D
Bundy Canyon Road Exit Ramp	D	E
Northbound		
Bundy Canyon Road Entrance Ramp	D	D
Railroad Canyon Road Exit Ramp	C	C
Railroad Canyon Road Entrance Ramp	D	D
Main Street Exit Ramp	E	D

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 17, Table, 5, and Table 26 (November 2014).
I-15 = Interstate 15
NB = northbound
SB = southbound

Table 2.7.AN: 2019 Queue Lengths, Alternative 4-Phase 1

Ramp Junction	Available Storage (ft)	Queuing Length (ft)		Queue Exceeds Pocket?
		A.M. Peak Hour	P.M. Peak Hour	
Railroad Canyon Road SB Exit Ramp	750	110	111	No
Railroad Canyon Road NB Exit Ramp	750	26.3	69.3	No
Main Street NB Exit Ramp (Stop Condition)	955	639	584	No

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 44 (November 2014).
ft = foot/feet
NB = northbound
SB = southbound

Freeway Ramp Meter Queuing

Ramp meters are proposed at two entrance ramps under Alternative 4-Phase 1. Table 2.7.AO summarizes the opening year (2019) a.m. and p.m. peak hour queuing on the entrance ramps. The analysis revealed the Total Ramp Demand does not exceed the Total Ramp Meter Rate and that queuing would not occur during the a.m. or p.m. peak period.

Table 2.7.AO: 2019 Entrance Ramp Meter Queuing Summary, Alternative 4-Phase 1

Intersection	Total Ramp Meter Rate (VPH)	Peak Hour		Demand Exceeds Rate?
		A.M.	P.M.	
Railroad Canyon Road SB Entrance Ramp	1,440	757	561	No
Railroad Canyon Road NB Entrance Ramp	1,440	1,286	991	No

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 45 (November 2014).
NB = northbound
SB = southbound
VPH = vehicles per hour

Freeway Weave-Merge

No weaving analysis was conducted because no weaving section in the study area is less than 2,500 ft in length for the existing condition. The Bundy Canyon Road interchange ramps are located more than 12,000 ft to the south of the Railroad Canyon Road interchange ramps, and the Main Street interchange ramps are located more than 6,500 ft to the north. According to the Highway Capacity Manual, the maximum length for which a weaving analysis is conducted is 2,500 ft. Beyond this length, merge and diverge areas are considered separately using the Ramps and Ramp Junctions methodology.

ALTERNATIVE 4-PHASE 1: ROUNDABOUT ALTERNATIVE FAILURE YEAR (2025) ANALYSIS

Freeway Mainline

Table 2.7.AP identifies level of service for I-15 mainline segments in failure year (2025) conditions under Alternative 4-Phase 1. All but one southbound mainline freeway segment would operate at LOS D during the a.m. and p.m. peak hour, and all but one northbound freeway segment would operate at LOS D during the a.m. and p.m. peak hour.

Table 2.7.AP: 2025 Mainline/Intersection/Freeway Ramp Levels of Service, Alternative 4-Phase 1

Freeway Segment/Intersection/Ramp Junction	Level of Service A.M. Peak Hour	Level of Service P.M. Peak Hour
I-15 Mainline Segment		
Southbound		
I-15 (Bundy Canyon Road to Railroad Canyon Road)	D	D
I-15 (Railroad Canyon Road to Main Street)	D	F
Northbound		
I-15 (Bundy Canyon Road to Railroad Canyon Road)	D	D
I-15 (Railroad Canyon Road to Main Street)	E	D
Intersection		
Franklin Street/Avenue 6 (Stop Condition)	B	D
Franklin Street/Auto Center Drive	A	A
Franklin Street at Canyon View Dr-Grunder Dr (Stop Condition)	B	B
Diamond Drive-Railroad Canyon Road/Mission Trail-Lake Shore Drive	A	D
Diamond Drive-Railroad Canyon Road/Casino Road-Auto Center Drive	A	B
Railroad Canyon Road/I-15 SB Ramps	B	E
Railroad Canyon Road/I-15 NB Ramps	A	A
Railroad Canyon Road/Grape Street-Summerhill Drive	B	B
Main Street/I-15 SB Ramps (Stop Condition)	F	F
Main Street/I-15 NB Ramps (Stop Condition)	F	F
Main Street/Camino Del Norte (Stop Condition)	F	F
Ramp Junction		
Southbound		
Main Street Entrance Ramp	D	F
Railroad Canyon Road Exit Ramp	C	F
Railroad Canyon Road Entrance Ramp	C	D
Bundy Canyon Road Exit Ramp	D	E
Northbound		
Bundy Canyon Road Entrance Ramp	D	E
Railroad Canyon Road Exit Ramp	C	C
Railroad Canyon Road Entrance Ramp	D	D
Main Street Exit Ramp	E	E

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 19, Table 8 and Table 28 (November 2014).
NB = northbound
SB = southbound

Intersection Levels of Service

Table 2.7.AP summarizes the 2025 a.m. and p.m. peak-hour level of service for the study intersections under Alternative 4-Phase 1. As identified in Table 2.7.AP, all of the Franklin Street intersections (at Avenue 6, Auto Center Drive, and Canyon View Drive-Grunder Drive), are projected to operate at LOS D or better during both the a.m. and p.m. peak hour. All five of the Railroad Canyon Road intersections are projected to operate at LOS B or better during the a.m. peak hour. All three of the Main Street intersections are projected to operate LOS F during the a.m. and p.m. peak period.

Freeway Ramps

Table 2.7.AP summarizes the failure year (2025) a.m. and p.m. peak hour levels of service for the Railroad Canyon/I-15, Main Street/I-15, and I-15/Bundy Canyon Road freeway ramp influence areas under Altern ative 4-Phase 1. As identified in Table 2.7.AP, all southbound freeway ramp junctions are projected to operate at LOS C or worse during the a.m. and p.m. peak hours. All of the northbound freeway ramps are expected to operate at LOS E or better during the a.m. and p.m. peak hours.

Freeway Exit Ramp Queuing

Table 2.7.AQ summarizes the failure year (2025) a.m. and p.m. peak hour queuing lengths for all exit ramps (Railroad Canyon Road Southbound Exit Ramp, Railroad Canyon Northbound Exit Ramp, and the Main Street Northbound Exit Ramp) under Alternative 4-Phase 1. The analysis revealed that queuing would occur on the Main Street Northbound Exit Ramp during the a.m. and p.m. peak hour, as well as on the Railroad Canyon Southbound Exit Ramp during the p.m. peak hour.

Table 2.7.AQ: 2025 Queue Lengths, Alternative 4-Phase 1

Ramp Junction	Available Storage (ft)	Queuing Length (ft)		Queue Exceeds Pocket?
		A.M. Peak Hour	P.M. Peak Hour	
Railroad Canyon Road SB Exit Ramp	750	159	1,163	Yes- P.M., No-A.M.
Railroad Canyon Road NB Exit Ramp	750	32	112	No
Main Street NB Exit Ramp (Stop Condition)	955	1,394	1,098	Yes

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 50 (November 2014).
ft = foot/feet
NB = northbound
SB = southbound

Freeway Entrance Ramp Metering Queuing

Ramp meters are proposed at two entrance ramps under Alternative 4-Phase 1. Table 2.7.AR summarizes the failure year (2025) a.m. and p.m. peak hour queuing on the entrance ramps. Based on these data, the Total Ramp Demand does not exceed the Total Ramp Meter Rate for either entrance ramp during the a.m. or p.m. peak hour.

Table 2.7.AR: 2025 Entrance Ramp Meter Queuing Summary, Alternative 4-Phase 1

Ramp Junction	Total Ramp Meter Rate (VPH)	Peak Hour		Demand Exceeds Rate?
		A.M.	P.M.	
Railroad Canyon Road SB Entrance Ramp	1,440	843	624	No
Railroad Canyon Road NB Entrance Ramp	1,440	1,432	1,104	No

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 51 (November 2014).
NB = northbound
SB = southbound
VPH = vehicles per hour

Freeway Weave-Merge

No weaving analysis was conducted because no weaving section in the study area is less than 2,500 ft in length for the existing condition. The Bundy Canyon Road interchange ramps are located more than 12,000 ft to the south of the Railroad Canyon Road interchange ramps, and the Main Street interchange ramps are located more than 6,500 ft to the north. According to the Highway Capacity Manual, the maximum length for which a weaving analysis is conducted is 2,500 ft. Beyond this length, merge and diverge areas are considered separately using the Ramps and Ramp Junctions methodology.

ALTERNATIVE 4-PHASE 2: ROUNDABOUT ALTERNATIVE OPENING YEAR (2025) ANALYSIS

Freeway Mainline

Table 2.7.AS provides level of service for each mainline I-15 segment in the opening year (2025) with the Alternative 4-Phase 2 improvements. As Table 2.7.AS indicates, during the a.m. and p.m. peak hour, both the northbound and southbound freeway segments in the study area are projected to operate at LOS C or better.

Intersection Levels of Service

Table 2.7.AS summarizes the opening year (2025) a.m. and p.m. peak-hour level of service for the study intersections under Alternative -Phase 2. As identified in Table 2.7.AS, all of the Franklin Street intersections (at Auto Center Drive, Southbound and Northbound Ramps, and Camino Del Norte), are projected to operate at LOS C or better during both the a.m. and p.m. peak periods. Four of the five Railroad Canyon Road intersections (at Mission Trail-Lake Shore Drive, Casino Road-Auto Center Drive, I-15 Southbound and Northbound Ramps, and Grape Street-Summerhill Drive) are projected to operate at LOS B or better during the a.m. and p.m. peak hours. All three of the Main Street intersections (at the Southbound and Northbound Ramps, and Camino Del Norte) are projected to operate LOS C or better during the a.m. and p.m. peak periods.

Freeway Ramps

Table 2.7.AS summarizes the opening year (2025) a.m. and p.m. peak hour levels of service for the Railroad Canyon/I-15, Main Street/I-15, and I-15/Bundy Canyon Road freeway ramp influence areas under Alternative 4-Phase 2. As identified in Table 2.7.AS, all but one southbound freeway ramp junctions are projected to operate at LOS C or better during the a.m. and p.m. peak hour. All of the northbound freeway ramp junctions are projected to operate at LOS C or better during both the a.m. and p.m. peak hour.

Freeway Exit Ramp Queuing

Table 2.7.AT summarizes the future year (2025) a.m. and p.m. peak hour queuing lengths for five exit ramps (Casino Road-Railroad Canyon Road Southbound Exit Ramp, Grape Street-Railroad Canyon Northbound Exit Ramp, the Franklin Street Southbound and Northbound Exit Ramps, and the Main Street Northbound Exit Ramp) under Alternative 4-Phase 2. The analysis revealed that no queuing would occur during the a.m. or p.m. peak hour.

Freeway Entrance Ramp Metering Queuing

Ramp meters are proposed at five entrance ramps under Alternative 4-Phase 2. Table 2.7.AU summarizes the opening year (2025) a.m. and p.m. peak hour queuing on the entrance ramps. Based on these data, the Total Ramp Demand does not exceed the Total Ramp Meter Rate. Therefore, no queuing would occur during the a.m. and p.m. peak hours.

Table 2.7.AS: 2025 Mainline/Intersection/Freeway Ramp Levels of Service, Alternative 4-Phase 2

Freeway Segment/Intersection/Ramp Junction	Level of Service	
	A.M. Peak Hour	P.M. Peak Hour
I-15 Mainline Segment		
Southbound		
I-15 (Bundy Canyon Road to Railroad Canyon Road)	B	C
I-15 (Railroad Canyon Road to Main Street)	B	C
I-15 (Franklin Street to Main Street)	B	C
Northbound		
I-15 (Bundy Canyon Road to Railroad Canyon Road)	C	C
I-15 (Railroad Canyon Road to Main Street)	B	B
I-15 (Franklin Street to Main Street)	B	B
Intersection		
Franklin Street/Avenue 6/Auto Center Drive	C	C
Franklin Street/SB Ramps	B	B
Franklin Street/NB Ramps	B	A
Franklin Street at Camino Del Norte	A	A
Diamond Drive-Railroad Canyon Road/Mission Trail-Lake Shore Drive	A	C
Diamond Drive-Railroad Canyon Road/Casino Road-Auto Center Drive	A	A
Railroad Canyon Road/I-15 SB Ramps	A	B
Railroad Canyon Road/I-15 NB Ramps	A	A
Railroad Canyon Road/Grape Street-Summerhill Drive	A	B
Main Street/I-15 SB Ramps (Stop Condition)	B	C
Main Street/I-15 NB Ramps (Stop Condition)	C	C
Main Street/Camino Del Norte (Stop Condition)	B	C
Ramp Junction		
Southbound		
Main Street Entrance Ramp	B	C
Franklin Street Exit Ramp	C	C
Franklin Street Entrance Ramp	B	C
Railroad Canyon Road Exit Ramp	C	D
Railroad Canyon Road Entrance Ramp	B	C
Bundy Canyon Road Exit Ramp	B	C
Northbound		
Bundy Canyon Road Entrance Ramp	C	C
Railroad Canyon Road Exit Ramp	B	B
Railroad Canyon Road Entrance Ramp	C	C
Franklin Street Exit Ramp	C	C
Franklin Street Entrance Ramp	C	C
Main Street Exit Ramp	C	C

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 21, Table 11 and Table 30 (November 2014).
I-15 = Interstate 15
NB = northbound
SB = southbound

Table 2.7.AT: 2025 Queue Lengths, Alternative 4-Phase 2

Ramp Junction	Available Storage (ft)	Queuing Length (ft)		Queue Exceeds Pocket?
		A.M. Peak Hour	P.M. Peak Hour	
Railroad Canyon Road SB Exit Ramp	750	66	167	No
Railroad Canyon Road NB Exit Ramp	750	20	36	No
Franklin Street SB Exit Ramp	685	102	223	No
Franklin Street NB Exit Ramp	535	82	62	No
Main Street NB Exit Ramp	500	182	217	No

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 56 (November 2014).
ft = foot/feet
NB = northbound
SB = southbound

Table 2.7.AU: 2025 Entrance Ramp Meter Queuing Summary, Alternative 4-Phase 2

Ramp Junction	Total Ramp Meter Rate (VPH)	Peak Hour		Demand Exceeds Rate?
		A.M.	P.M.	
Casino Road-Railroad Canyon Road SB Entrance Ramp	1,440	811	589	No
Grape Street-Railroad Canyon Road NB Entrance Ramp	1,440	1,409	1,120	No
Franklin Street SB Entrance Ramp	960	356	372	No
Franklin Street NB Entrance Ramp	960	467	337	No
Main Street SB Entrance Ramp	960	461	503	No

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 57 (November 2014).
NB = northbound
SB = southbound
VPH = vehicles per hour

Freeway Weave-Merge

Table 2.7.AV summarizes the opening year (2025) a.m. and p.m. peak hour freeway weave-merge LOS between Main Street and Franklin Road and Franklin Road and Railroad Canyon Road under Alternative 4-Phase 2. As Table 2.7.AV indicates, both the southbound and northbound freeway weave-merges are projected to operate at LOS C or better during the a.m. and p.m. peak hours, with the exception of one southbound freeway weave-merge during the p.m. peak hour.

Table 2.7.AV: 2025 Freeway Weave-Merge Levels of Service, Alternative 4-Phase 2

Freeway Segment	Weave Distance (ft)	Peak Hour Level of Service	
		A.M.	P.M.
I-15 Southbound			
Main Street Entrance Ramp to Franklin Street Exit Ramp	2,000	B	C
Franklin Street Entrance Ramp to Casino Road-Railroad Canyon Road Exit Ramp	2,260	B	D
Casino Road-Railroad Canyon Road Entrance Ramp to Bundy Canyon Exit Ramp	12,590	See Ramp Merge-Diverge LOS (weave length greater than 2,500 ft)	
I-15 Northbound			
Bundy Canyon Entrance Ramp to Grape Street- Railroad Canyon Road Exit Ramp	11,820	See Ramp Merge-Diverge LOS (weave length greater than 2,500 ft)	
Grape Street-Railroad Canyon Road Entrance Ramp to Franklin Street Exit Ramp	2,700	See Ramp Merge-Diverge LOS (weave length greater than 2,500 ft)	
Franklin Street Entrance Ramp to Main Street Exit Ramp	2,005	C	B

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 35 (November 2014).
LOS = level of service
NB = northbound
SB = southbound

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE DESIGN YEAR (2040) ANALYSIS

Freeway Mainline

Table 2.7AW provides level of service for each mainline I-15 segment in design year (2040) with the Alternative 4 improvements. As Table 2.7.AW indicates, during the a.m. peak hour, the northbound and southbound freeway segments in the study area are projected to operate at LOS C. During the p.m. peak hour, all freeway segments are projected to operate at LOS D or better.

Intersection Levels of Service

Table 2.7.AW summarizes the 2040 a.m. and p.m. peak-hour level of service for the study intersections under Alternative 4. As identified in Table 2.7.AW, all four intersections of Franklin Street are expected to operate at LOS C or better during both the a.m. and p.m. peak period. The five Railroad Canyon Road intersections are all expected to operate at LOS B or better during the a.m. peak period and at LOS C or better during the p.m. peak period. The three Main Street intersections are expected to operate at LOS D or better during both the a.m. and p.m. peak period hours.

Freeway Ramps

Table 2.7.AW summarizes the design year (2040) a.m. and p.m. peak-hour level of service for the freeway ramps that would be affected by Alternative 4. As Table 2.7.AW indicates, all northbound freeway ramp junctions are projected to operate at LOS D or better during the a.m. and p.m. peak hour, and the southbound freeway ramp junctions are projected to operate at LOS E or better during the a.m. and p.m. peak hour, with the exception of the southbound Bundy Canyon Road Exit Ramp, which would operate at a level LOS F during the p.m. peak hour.

Table 2.7.AW: 2040 Mainline/Intersection/Freeway Ramp Levels of Service, Alternative 4

Freeway Segment/Intersection/Ramp Junction	Level of Service A.M. Peak Hour	Level of Service P.M. Peak Hour
I-15 Mainline Segment		
Southbound		
I-15 (Bundy Canyon Road to Railroad Canyon Road)	C	D
I-15 (Railroad Canyon Road to Main Street)	C	D
I-15 (Franklin Street to Main Street)	C	D
Northbound		
I-15 (Bundy Canyon Road to Railroad Canyon Road)	C	C
I-15 (Railroad Canyon Road to Main Street)	C	C
I-15 (Franklin Street to Main Street)	C	C
Intersection		
Franklin Street/Avenue 6/Auto Center Drive	C	C
Franklin Street/SB Ramps	B	B
Franklin Street/NB Ramps	B	A
Franklin Street/Camino Del Norte	A	A
Diamond Drive-Railroad Canyon Road/Mission Trail-Lake Shore Drive	B	C
Diamond Drive-Railroad Canyon Road/Casino Road-Auto Center Drive	A	B
Railroad Canyon Road/I-15 SB Ramps	B	C
Railroad Canyon Road/I-15 NB Ramps	A	A
Railroad Canyon Road/Grape Street-Summerhill Drive	B	C
Main Street/I-15 SB Ramps (Stop Condition)	B	D
Main Street/I-15 NB Ramps (Stop Condition)	C	B
Main Street/Camino Del Norte (Stop Condition)	B	C
Ramp Junction		
Southbound		
Main Street Entrance Ramp	C	D
Franklin Street Exit Ramp	C	D
Franklin Street Entrance Ramp	C	D
Railroad Canyon Road Exit Ramp	E	E
Railroad Canyon Road Entrance Ramp	C	D
Bundy Canyon Road Exit Ramp	C	F
Northbound		
Bundy Canyon Road Entrance Ramp	D	D
Railroad Canyon Road Exit Ramp	C	C
Railroad Canyon Road Entrance Ramp	C	D
Franklin Street Exit Ramp	D	D
Franklin Street Entrance Ramp	C	C
Main Street Exit Ramp	D	D

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 23, Table 15 and Table 32 (November 2014).
I-15 = Interstate 15
NB = northbound
SB = southbound

Freeway Exit Ramp Queuing

Table 2.7.AX summarizes the design year (2040) a.m. and p.m. peak hour queuing lengths for all exit ramps (Casino Road-Railroad Canyon Road Southbound Exit Ramp, Grape Street-Railroad Canyon Northbound Exit Ramp, the Franklin Street Southbound and Northbound Exit Ramps, and the Main Street Northbound Exit Ramps) under Alternative 4. The analysis revealed that no queuing would occur during the a.m. or p.m. peak hour.

Table 2.7.AX: 2040 Queue Lengths, Alternative 4

Ramp Junction	Available Storage (ft)	Queuing Length (ft)		Queue Exceeds Pocket?
		A.M. Peak Hour	P.M. Peak Hour	
Railroad Canyon Road SB Exit Ramp	750	135	576	No
Railroad Canyon Road NB Exit Ramp	750	30	70	No
Franklin Street SB Exit Ramp	685	69	320	No
Franklin Street NB Exit Ramp	535	47	42	No
Main Street NB Exit Ramp	500	133	130	No

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 63 (November 2014).
ft = foot/feet
NB = northbound
SB = southbound

Freeway Ramp Meter Queuing Analysis

Ramp meters are proposed at five entrance ramps under Alternative 4. Table 2.7.AY summarizes the design year (2040) a.m. and p.m. peak hour queuing on the entrance ramps. Based on these data, the Total Ramp Demand does not exceed the Total Ramp Meter Rate. Therefore, no queuing would occur during the a.m. and p.m. peak hours.

Table 2.7.AY: 2040 Entrance Ramp Meter Queuing Summary, Alternative 4

Ramp Junction	Total Ramp Meter Rate (VPH)	Peak Hour		Demand Exceeds Rate?
		A.M.	P.M.	
Casino Road-Railroad Canyon Road SB Entrance Ramp	1,440	811	589	No
Grape Street-Railroad Canyon Road NB Entrance Ramp	1,440	1,409	1,120	No
Franklin Street SB Entrance Ramp	960	356	372	No
Franklin Street NB Entrance Ramp	960	467	337	No
Main Street SB Entrance Ramp	960	461	503	No

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 64 (November 2014).
NB = northbound
SB = southbound
VPH = vehicles per hour

Freeway Weave-Merge

Table 2.7.AZ summarizes the design year (2040) a.m. and p.m. peak hour freeway weave-merge LOS between Main Street and Franklin Road and Franklin Road and Railroad Canyon Road under Alternative 4. As Table 2.7.AZ indicates, both the southbound and northbound freeway weave-merges are projected to operate at LOS D or better during the a.m. and p.m. peak hours, with the exception of the southbound freeway weave-merge between Franklin Street and Railroad Canyon Road during the p.m. peak hour.

Table 2.7.AZ: 2040 Freeway Weave-Merge Levels of Service, Alternative 4

Freeway Segment	Weave Distance (ft)	Peak Hour Level of Service A.M.	Peak Hour Level of Service P.M.
Southbound			
(I-15) Main Street Entrance Ramp to Franklin Street Exit Ramp	2,000	C	D
(I-15) Franklin Street Entrance Ramp to Casino Road-Railroad Canyon Road Exit Ramp	2,260	C	E
(I-15) Casino Road-Railroad Canyon Road Entrance Ramp to Bundy Canyon Exit Ramp	12,590	See Ramp Merge-Diverge LOS (weave length greater than 2,500 ft)	
Northbound			
(I-15) Bundy Canyon Entrance Ramp to Grape Street-Railroad Canyon Road Exit Ramp	11,820	See Ramp Merge-Diverge LOS (weave length greater than 2,500 ft)	
(I-15) Grape Street-Railroad Canyon Road Entrance Ramp to Franklin Street Exit Ramp	2,700	See Ramp Merge-Diverge LOS (weave length greater than 2,500 ft)	
(I-15)Franklin Street Entrance Ramp to Main Street Exit Ramp	2,005	D	C

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 36 (November 2014).
ft = foot/feet
I-15 = Interstate 15
LOS = level of service

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE—SUMMARY

Tables 2.7.BA and 2.7.BB provide a comparison of Alternative 4, the No Build Alternative in opening year (2019) and design year (2040) against baseline (2013) conditions.

Pedestrian Access and Bicycle Facilities

Within the project limits, existing nonstandard curb ramps would be upgraded to conform to ADA requirements. New curb ramps would meet ADA requirements. In addition, all new sidewalks that are proposed along local roadways would be designed per ADA standards and requirements. These features would improve pedestrian access at both interchanges. Railroad Canyon Road is identified as a Class II bicycle facility and new bicycle facility features proposed would also be incorporated into the project design. This would be consistent with the City of Lake Elsinore General Plan and would improve bicycle access in the interchange areas. The following measures apply to Alternatives 2, 3, and 4.

Table 2.7.BA: 2019 Operations Improvements of Alternative 4 When Compared to the No Build Alternative and Baseline (2013) Conditions

I-15 Segment/Intersection/Ramp Junction	A.M. Level of Service			P.M. Level of Service		
	Baseline (2013)	No Build (2019)	Alternative 4 (2019)	Baseline (2013)	No Build (2019)	Alternative 4 (2019)
I-15 Mainline Segment						
Southbound Bundy Canyon Road to Casino Road-Railroad Canyon Road	C	C	C	C	D	D
Southbound Caisno Road-Railroad Canyon Road to Franklin Street* Southbound Franklin Street to Main Street	C	C	C	D	E	E
Northbound Bundy Canyon Road to Grape Street-Railroad Canyon Road	C	C	C	C	D	D
Northbound Grape Street-Railroad Canyon Road to Franklin Street* Northbound Franklin Street to Main Street*	D	D	D	C	D	D
Intersection						
Franklin Street at Avenue 6 (Stop Condition)	B	B	B	C	C	C
Avenue 6-Franklin Street/Auto Center Drive	A	A	A	A	A	A
Franklin Street/I-15 SB Ramps*	—	—	—	—	—	—
Franklin Street/I-15 NB Ramps*	—	—	—	—	—	—
Franklin Street/Canyon View Drive-Grunder Drive	B	A	A	B	B	B
Franklin Street/Camino Del Norte-Canyon Estates Drive*	—	—	—	—	—	—
Railroad Canyon Road/Mission Trail-Lake Shore Drive	B	C	A	C	D	B
Railroad Canyon Road/Casino Road-Auto Center Drive	B	C	A	C	C	A
Railroad Canyon Road/I-15 SB Ramps	D	D	B	E	F	A
Railroad Canyon Road/I-15 NB Ramps	E	E	A	F	F	A
Railroad Canyon Road/Grape Street/Summerhill Drive	F	F	A	F	F	B
Main Street/I-15 SB Ramps	C	D	D	B	F	F
Main Street/I-15 NB Ramps	C	F	F	C	F	F
Main Street/Camino Del Norte	B	C	C	C	E	E
Ramp Junction						
Main Street Southbound Entrance Ramp	C	D	D	D	F	F
Franklin Street Southbound Exit Ramp*	-	-	-	-	-	-
Franklin Street Southbound Entrance Ramp*	-	-	-	-	-	-
Casino Road-Railroad Canyon Road Southbound Exit Ramp	D	D	B	E	F	F
Railroad Canyon Road Southbound Entrance Ramp	D	D	C	D	D	D
Bundy Canyon Rounad Southbound Exit Ramp	D	D	D	C	E	E

Table 2.7.BA: 2019 Operations Improvements of Alternative 4 When Compared to the No Build Alternative and Baseline (2013) Conditions

I-15 Segment/Intersection/Ramp Junction	A.M. Level of Service			P.M. Level of Service		
	Baseline (2013)	No Build (2019)	Alternative 4 (2019)	Baseline (2013)	No Build (2019)	Alternative 4 (2019)
Bundy Canyon Road Northbound Entrance Ramp	D	D	D	D	D	D
Railroad Canyon Road Northbound Exit Ramp	D	D	C	D	D	C
Railroad Canyon Road Northbound Entrance Ramp	D	E	D	D	D	D
Franklin Street Northbound Exit Ramp*	-	-	-	-	-	-
Franklin Street Northbound Entrance Ramp*	-	-	-	-	-	-
Main Street Northbound Exit Ramp	D	E	E	D	D	D

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 16 and 17, Table 1,2, and 5, Table 24, 25 and 26 (November 2014).
* These locations do not exist under the No Build Alternative. However, it is anticipated that these locations would reduce the amount of congestion on I-15 or on local streets.
I-15 = Interstate 15
NB = northbound
SB = southbound

Table 2.7.BB: 2040 Operations Improvements of Alternative 4 When Compared to the No Build Alternative and Baseline (2013) Conditions

<table>
<tr><th rowspan="2">I-15 Segment/Intersection/Ramp Junction</th><th colspan="3">A.M. Level of Service</th><th colspan="3">P.M. Level of Service</th></tr>
<tr><th>Baseline (2013</th><th>No Build (2040)</th><th>Alternative 4 (2040)</th><th>Baseline (2013)</th><th>No Build (2040)</th><th>Alternative 4 (2040)</th></tr>
<tr><td colspan="7">I-15 Mainline Segment</td></tr>
<tr><td>Southbound Bundy Canyon Road to Casino Road-Railroad Canyon Road</td><td>C</td><td>E</td><td>C</td><td>C</td><td>F</td><td>D</td></tr>
<tr><td>Southbound Casino Road-Railroad Canyon Road to to Franklin Street*</td><td rowspan="2">C</td><td rowspan="2">E</td><td>C</td><td rowspan="2">D</td><td rowspan="2">F</td><td>D</td></tr>
<tr><td>Southbound Franklin Street to Main Street</td><td>C</td><td>D</td></tr>
<tr><td>Northbound Bundy Canyon Road to Grape Street-Railroad Canyon Road</td><td>C</td><td>E</td><td>C</td><td>C</td><td>F</td><td>D</td></tr>
<tr><td>Northbound Grape Street-Railroad Canyon Road to Franklin Street*</td><td rowspan="2">D</td><td rowspan="2">F</td><td>C</td><td rowspan="2">C</td><td rowspan="2">F</td><td>C</td></tr>
<tr><td>Northbound Franklin Street to Main Street*</td><td>C</td><td>C</td></tr>
<tr><td colspan="7">Intersection</td></tr>
<tr><td>Franklin Street-Avenut 6 (Stop Condition)</td><td>B</td><td>B</td><td>C</td><td>C</td><td>F</td><td>C</td></tr>
<tr><td>Avenue 6-Franklin Street/Auto Center Drive</td><td>A</td><td>A</td><td>-</td><td>A</td><td>B</td><td>-</td></tr>
<tr><td>Franklin Street/I-15 SB Ramps*</td><td>-</td><td>-</td><td>B</td><td>-</td><td>-</td><td>B</td></tr>
<tr><td>Franklin Street/I-15 NB Ramps*</td><td>-</td><td>-</td><td>B</td><td>-</td><td>-</td><td>A</td></tr>
<tr><td>Franklin Street/Canyon View-Grunder Drive (Stop Condition)</td><td>B</td><td>B</td><td>-</td><td>B</td><td>C</td><td>-</td></tr>
<tr><td>Franklin Street/Camino Del Norte-Canyon Estates Drive*</td><td>-</td><td>-</td><td>A</td><td>-</td><td>-</td><td>A</td></tr>
<tr><td>Railroad Canyon Road/Mission Trail-Lake Shore Drive</td><td>B</td><td>E</td><td>B</td><td>C</td><td>F</td><td>C</td></tr>
<tr><td>Railroad Canyon Road/Casino Road-Auto Center Drive</td><td>B</td><td>E</td><td>A</td><td>C</td><td>F</td><td>B</td></tr>
<tr><td>Railroad Canyon Road/I-15 SB Ramps</td><td>D</td><td>F</td><td>B</td><td>E</td><td>F</td><td>C</td></tr>
<tr><td>Railroad Canyon Road/I-15 NB Ramps</td><td>E</td><td>F</td><td>A</td><td>F</td><td>F</td><td>A</td></tr>
<tr><td>Railroad Canyon Road/Grape Street/Summerhill Drive</td><td>F</td><td>F</td><td>B</td><td>F</td><td>F</td><td>C</td></tr>
<tr><td>Main Street/I-15 SB Ramps</td><td>C</td><td>F</td><td>B</td><td>B</td><td>F</td><td>D</td></tr>
<tr><td>Main Street/I-15 NB Ramps</td><td>C</td><td>F</td><td>C</td><td>C</td><td>F</td><td>B</td></tr>
<tr><td>Main Street/Camino Del Norte</td><td>B</td><td>F</td><td>B</td><td>C</td><td>F</td><td>C</td></tr>
<tr><td colspan="7">Ramp Junction</td></tr>
<tr><td>Main Street Southbound Entrance Ramp</td><td>C</td><td>F</td><td>C</td><td>D</td><td>F</td><td>D</td></tr>
<tr><td>Franklin Street Southbound Exit Ramp*</td><td>-</td><td>-</td><td>C</td><td>-</td><td>-</td><td>D</td></tr>
<tr><td>Franklin Street Southbound Entrance Ramp*</td><td>-</td><td>-</td><td>C</td><td>-</td><td>-</td><td>D</td></tr>
<tr><td>Casino Road-Railroad Canyon Road Southbound Exit Ramp</td><td>D</td><td>E</td><td>E</td><td>E</td><td>F</td><td>E</td></tr>
</table>

Table 2.7.BB: 2040 Operations Improvements of Alternative 4 When Compared to the No Build Alternative and Baseline (2013) Conditions

I-15 Segment/Intersection/Ramp Junction	A.M. Level of Service			P.M. Level of Service		
	Baseline (2013	No Build (2040)	Alternative 4 (2040)	Baseline (2013)	No Build (2040)	Alternative 4 (2040)
Railroad Canyon Road Southbound Entrance Ramp	D	F	C	D	F	D
Bundy Canyon Road Southbound Exit Ramp	D	E	C	C	F	F
Bundy Canyon Road Northbound Exit Ramp	D	F	D	D	F	D
Railroad Canyon Road Northbound Exit Ramp	D	F	C	D	F	C
Railroad Canyon Road Northbound Entrance Ramp	D	F	C	D	F	D
Franklin Street Northbound Exit Ramp*	-	-	D	-	-	D
Franklin Street Northbound Entrance Ramp*	-	-	C	-	-	C
Main Street Northbound Exit Ramp	D	F	D	D	F	D

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* Table 16, 22 and 23, Table 1, 12, and 15, Table 24, 31 and 32 (November 2014).
* These locations do not exist under the No Build Alternative. However, it is anticipated that these locations would reduce the amount of congestion on I-15 or on local streets.
I-15 = Interstate 15
NB = northbound
SB = southbound

CEQA Discussion

Would the project:

XVI. a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?

Less Than Significant Impact. The project consists of improvements to existing roadways and freeway interchanges. Implementation of the project would not cause an increase in traffic that would result in a deficient level of service at intersections or along freeway segments. Therefore, a less than significant impact would occur, and no mitigation is required.

XVI. b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?

Less Than Significant Impact. Please refer to CEQA Response a) above.

XVI. c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?

No Impact. The project consists of roadway and freeway interchange improvements. The project would not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks. Therefore, no impacts would occur, and no mitigation measures are required.

XVI. d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Less Than Significant Impact. The proposed roadway and freeway interchange improvements would not increase hazards due to design features as the construction of the project would be required to adhere to Caltrans design standards. However, there are existing non-standard curb ramps in the project vicinity that would be required to be updated to meet Americans with Disabilities Act (ADA) requirements for accessibility. No additional access or roadway improvements have been proposed that would substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).

To ensure that the project would be designed to ADA requirements, **Minimization Measures TR-2** and **TR-3**, which are standard conditions presented below in Section 2.7.4, have been identified. Adherence to **Minimization Measures TR-2** and **TR-3** would ensure impacts remain less than significant.

XVI. e) Result in inadequate emergency access?

Less Than Significant Impact. Construction activities associated with the project would result in temporary road detours and access restrictions during construction, which may result in some impairment to the delivery of services, including fire and police response. However, significant disruptions to the local access network within the study area are not anticipated with implementation of a TMP. Adherence to **Minimization Measure TR-1**, a standard condition presented below in Section 2.14.4, would ensure impacts remain less than significant related to emergency access.

XVI. f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?

No Impact. The existing freeway facility currently does not conflict with programs or policies pertaining to alternative transportation. The proposed roadway and interchange improvements would not conflict with adopted policies, plans, or programs supporting alternative transportation. No impacts would occur, and no mitigation is required.

2.7.4 Avoidance, Minimization, and/or Mitigation Measures

Minimization Measures

TR-1 A detailed Transportation Management Plan (TMP) shall be prepared during the final design phase of the project. The objective of the TMP is to minimize the potential impacts that construction activities may have on the traveling public and emergency services providers. Preparation of the TMP shall be coordinated with the emergency services providers in the project vicinity to minimize response delays resulting from traffic delays, temporary ramp and lane closures, and detours during project construction.

The TMP for the project shall include the following elements and strategies:

1. Traffic control plans and related specifications, to be completed during final design of the project, shall be developed in accordance with the Work Area Traffic Control Handbook (also referred to as the WATCH manual), Section 5 of the California Department of Transportation (Caltrans) Traffic Manual, Caltrans Standard Plans, and applicable City of Lake Elsinore requirements. These plans and specifications shall include elements such as advance roadside signs and portable changeable message signs; traffic surveillance; lane/shoulder closures; and temporary signing/striping on local streets, the Interstate 15 (I-15) ramps, and the I-15 mainline. Temporary overnight lane closures of I-15 and the on- and off-ramps are anticipated during construction. Lane closures along the mainline, which would be limited to the nighttime, would be coordinated with Caltrans. Signal timing may be adjusted along the detour routes to enhance traffic operations.
2. The project shall implement a Construction Zone Enhanced Enforcement Program and use California Highway Patrol officers to enforce lane closures and provide a visual deterrent to errant/speeding vehicles.
3. The project shall implement a Public Awareness Campaign (PAC). Although any lane closures would occur at night, there would still be a potential temporary impact to vehicles traveling through the construction zone. The purpose of this PAC is to keep the surrounding community abreast of the project's progress and construction activities that could affect the public's travel plans and to minimize delays or confusion to the motoring public during construction activities. Mailers/flyers and local newspaper advertising shall be used to disseminate this information.
4. The project shall implement a Construction Freeway Service Patrol (CFSP) program. The CFSP shall provide tow truck service to aid stranded motorists and remove disabled vehicles from the traveled way or shoulders.
5. The project shall implement the following construction strategies to minimize construction-related impacts:
    a. Perform major construction activities at off-peak hours, such as at night or during the weekends, when feasible and reasonable.
    b. Finalize ramp closure charts during the final design phase. During final design, the proposed lane and ramp closures shall be presented to Caltrans Lane Closures Review Committee for approval.
    c. Coordinate construction with adjacent projects. Coordination is important to address possible temporary increases in traffic due to detours from adjacent projects. Construction of the adjacent projects is anticipated to be completed prior to construction of the project.
    d. All ramp reconstruction and local street and freeway widening shall be constructed in stages to minimize disruption.
6. The project shall include contingency plans that specify the actions that shall be taken in the event that something unexpected occurs with respect to construction activities or traffic operations. The contractor shall review these plans and incorporate them into the contractor's contingency plan.

TR-2 Construction of the project will include provisions for maintaining pedestrian and bicycle access at all times during construction.

TR-3 Existing nonstandard curb ramps will be upgraded to conform to Americans with Disabilities Act (ADA) requirements. Additionally, minimum-width 5-foot sidewalks will be incorporated into the design to provide ADA-required access.

This page intentionally left blank

2.8 Visual/Aesthetics

2.8.1 Regulatory Setting

The National Environmental Policy Act of 1969 as amended (NEPA) establishes that the federal government use all practicable means to ensure all Americans a safe, healthful, productive, and *aesthetically* (emphasis added) and culturally pleasing surroundings (42 United States Code USC 4331[b][2]). To further emphasize this point, the Federal Highway Administration (FHWA) in its implementation of NEPA (23 USC 109[h]) directs that final decisions regarding projects are to be made in the best overall public interest taking into account adverse environmental impacts, including among others, the destruction or disruption of aesthetic values.

Likewise, the California Environmental Quality Act (CEQA) establishes that it is the policy of the state to take all action necessary to provide the people of the state "with…enjoyment of *aesthetic*, natural, scenic and historic environmental qualities." (CA Public Resources Code [PRC] Section 21001[b])

2.8.2 Affected Environment

This section is based on the following document prepared for the project:

- *Visual Impact Assessment I-15/Railroad Canyon Road Interchange Project* (VIA) (July 2015)

The VIA follows the recommended methodology in the publication "*Visual Impact Assessment for Highway Projects*" (FHWA, March 1981).

2.8.2.1 Visual Setting

The project area is located in Riverside County on Interstate 15 (I-15) approximately 0.5 mile east of downtown Lake Elsinore and is situated within Lake Elsinore Valley along the base of the Sedco Hills and Steele Peak. The topography is relatively flat to rolling terrain with elevations ranging from approximately 1,280 to 1,460 feet (ft) above mean sea level (amsl). The landscape is characterized by the Elsinore and Santa Ana Mountains to the west and encompasses hills, valleys, riparian communities, boulders/rock outcroppings, naturalized grasses, oak trees, sycamores and Peruvian pepper trees lining roadways. The land use characteristic within the corridor is primarily semi-urban—coupled with residential, commercial, and open space.

Vegetation within the project area has been affected by the existing I-15 infrastructure, paved and dirt roadways, residential and commercial development, off-road vehicle use, and disking. Vegetation communities within the study area consist of disturbed/ruderal, disturbed Riversidean sage scrub, southern willow scrub, willow scrub, mule fat scrub, and ornamental. The dominant vegetation community within the study area is disturbed/ruderal and this vegetation community occurs within disked areas heavily disturbed by development. Disturbed Riversidean sage scrub primarily occurs within the northern portion of the project area north and south of Grunder Drive, and along the margins and slopes of I-15. Southern willow scrub, willow scrub, and mule fat scrub are present within the banks of the San Jacinto River and within a concrete-lined drainage channel at I-15, along the Main Street southbound off-ramp. Ornamental vegetation occurs within the northwestern portion of the project area along the margins of I-15 and at the I-15/Main Street interchange.

The City of Lake Elsinore (City) General Plan (2011) Land Use Element and Open Space Element include the following policies to protect visual resources that are relevant to the planned I-15/Railroad Canyon Road interchange project:

- Land Use Element

  Policy 1.1 Promote innovative site design, and encourage the preservation of unique natural features, such as steep slopes, watercourses, canyons, ridgelines, rock formations, and open space with recreational opportunities.

  Policy 3.2 Encourage new commercial and/or industrial development incorporate buffers which minimize the impacts of noise, light, visibility, or activity and vehicular traffic on residential uses and MSHCP conservation areas.

- Open Space Element

  Policy 1.4 Encourage revegetation with native plants compatible with natural surrounding habitat where soil have been disturbed during construction, and discourage plants identified in the MSHCP as unsuitable for conservation areas.

  Policy 3.4 Preserve the City's visual character, in particular the surrounding hillsides, which topographically define the lake region.

The I-15 corridor is an Eligible State Scenic Highway; however, this corridor is not an Officially Designated State Highway. Railroad Canyon Road is not a designated scenic highway within the project boundaries, nor is the I-15/Railroad Canyon Road interchange located within designated scenic vistas. Additionally, Franklin Street is not a designated scenic highway, nor is this overcrossing located within a designated scenic vista.

2.8.2.2 Visual Assessment Units

The project corridor was divided into a series of "outdoor rooms" or visual assessment units. Each visual assessment unit has its own visual character and visual quality. It is typically defined by the limits of a particular viewshed. For this project, the following four visual assessment units and their associated key views have been identified:

TRANSPORTATION CORRIDOR VISUAL ASSESSMENT UNIT

The Transportation Corridor Assessment Unit, represented by Key Views 2, 3, 4, 6, 7, 8, and 10 includes I-15, Railroad Canyon Road, and Franklin Street. I-15 is an urban corridor and includes urban elements such as lighting, signage, and landscaping. Most properties adjacent to Franklin Street are undeveloped and do not contain urban elements. Views are limited to the corridors themselves with the exception of the Franklin Street overcrossing, which provides distant views of the Santa Ana and Elsinore Mountain on the west and the rolling hills on the east.

COMMERCIAL ASSESSMENT UNIT

The Commercial Assessment Unit, represented by Key Views 1, 6, 7, 8, and 9 includes views of I-15 and Grape Street. The Commercial Assessment Unit consists of commercial retail buildings (big box and pads), restaurants, financial institutions, and a large parking lot within the southeast quadrant of the I-15/Railroad Canyon Road interchange. The parking lot is surrounded by shrubs and small trees. Views within this landscape unit are primarily of the adjacent development, Grape Street, the Railroad Canyon Road on-ramps and off-ramps, I-15, and the Santa Ana and Elsinore Mountains.

CAR DEALERSHIP ASSESSMENT UNIT

The Car Dealership Assessment Unit, represented by Key View 1, is located in the southwest quadrant of the I-15/Franklin Street interchange. The dealership property consists of a parking lot and a building with a showroom and offices. The area surrounding the dealership includes ruderal vegetation, a parking lot, utility poles, residential land uses, Franklin Street, and Casino Drive. Views are limited to the adjacent development and adjacent roadways including I-15. This area is developed, and there are no particular areas that provide opportunities for extended views. Views are limited to the adjacent development and adjacent roadways including I-15.

RESIDENTIAL ASSESSMENT UNIT

The Residential Assessment Unit, represented by Key Views 1, 2, 3, 4, 5, 6, 7, and 8, is located in the southeast and southwest quadrants of the I-15/Franklin Street interchange and within the southeast quadrant of the I-15/Railroad Canyon Road interchange. This unit is characterized by residential streets and residential properties, utility poles and wires, and ornamental vegetation. This unit includes the views from Canyon View Drive, Avenue Six, and Grape Street.

2.8.2.3 Key Views

Because it is not feasible to analyze all the views in which the project would be seen, it is necessary to select a number of key views associated with visual assessment units that would most clearly demonstrate the change in the project's visual resources (see Figure 2.8.1). Key views also represent the viewer groups that have the highest potential to be affected by the project considering exposure and sensitivity. The following describes eleven key views and the viewer groups that are represented:

KEY VIEW NO. 1

As illustrated in Figure 2.8.2, Key View No. 1 is a view from a residential perspective and is taken from a vacant area zoned for residential uses. This view faces the future location of the Franklin Street overcrossing and faces the Car Dealership Assessment Unit. The dominant features in this key view are the Santa Ana and Elsinore Mountains located in the background. Land cover includes I-15, freeway right-of-way fencing, and a car dealership building and sign. Vegetation visible within this key view consists of ruderal plants, grasses, and single tree stands located on the both sides of I-15. Many encroachment features including freeway traffic, overhead power lines, and a fence create a view with a low intactness.

KEY VIEW NO. 2

As illustrated in Figure 2.8.2, Key View No. 2 is a view from a residential perspective and is taken from the northwest quadrant of the I-15/Franklin Street interchange site in an area zoned for residential uses. This view faces east toward I-15 and the existing Franklin Street overcrossing and faces the Transportation Corridor Visual Assessment Unit. Visible land cover from this vantage point consists of manmade development and vegetation within and adjacent to the freeway right-of-way. Land cover consists mostly of I-15, the existing Franklin Street overcrossing and vegetation that includes trees on both sides of I-15. Encroaching features include power poles and lines, an antennae tower and water quality detention basins in the midground. There is a large expanse of graded area in the foreground within this vantage point creating a pattern with low intactness.

This page intentionally left blank

SOURCE: Bing Aerial, 2015.

I:\SAE1401\Reports\IS_EA\fig2-8-1_KeyViewLoc.mxd (12/21/2015)

FIGURE 2.8.1

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Key View Locations

This page intentionally left blank

Key View 1: *View facing southwest toward the future Franklin Street Interchange from the east of I-15.*

Key View 2: *View facing east toward the future Franklin Street Interchange from the west of I-15.*

FIGURE 2.8.2

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Key Views 1 & 2

SOURCE: Estrada Land Planning, Inc., 2015

This page intentionally left blank

KEY VIEW NO. 3

As illustrated in Figure 2.8.3, Key View No. 3 is view from a residential perspective and is taken from the northwest quadrant of the I-15/Franklin Street interchange. This view faces northeast toward the hills and the future Franklin Street overcrossing and faces the Transportation Corridor Visual Assessment Unit. Land cover consists of a single roadway and I-15 (evident solely due to the presence of vehicles). The hills in the background are the dominant feature from this vantage point and are clearly visible. Other elements include passing vehicles along I-15. Shrubs and ruderal vegetation add texture to this key view, but do not represent a high visual value due to lack of abundance, vibrant colors, or mosaic pattern. Encroaching features include power poles and lines, an antennae tower, a billboard, and water quality detention basins.

KEY VIEW NO. 4

As illustrated in Figure 2.8.3, Key View No. 4 is a view from a residential perspective and is taken from the southwest quadrant of the I-15/Franklin Street interchange. This view faces northwest toward the future Franklin Street overcrossing located beyond the vacant property and faces the Transportation Corridor Visual Assessment Unit. The dominant features in this view are the hills to the north and the green foliage of the sparse vegetation alongside I-15. The streetlights and signals, billboard, and power poles and lines are encroaching elements that reduce the cohesiveness of this view. The sky and the trees add visual value to the manmade and natural components of this view.

KEY VIEW NO. 5

As illustrated in Figure 2.8.4, Key View No. 5 is a view from a residential perspective taken from the area along Canyon View Drive in the southeast quadrant of the planned I-15/Franklin Street interchange. This view faces west toward I-15 and the future Franklin Street overcrossing and faces the Residential Assessment Unit. The foreground is dominated by manmade development and consists mostly of residential units, Canyon View Drive in the center, sidewalk, fencing, utility poles, street signs, and trees. The background view comprises a small knoll, vegetated hills, and the Santa Ana and Elsinore Mountains in the distance. The hills and the mountains are highly contrasting landscape elements.

KEY VIEW NO. 6

As illustrated in Figure 2.8.4, Key View No. 6 is a view from a commercial perspective taken from the commercial center located on Grape Street in the southeast quadrant of the I-15/ Railroad Canyon Road interchange. This view faces northwest toward the existing Railroad Canyon Road interchange and represents the Transportation Corridor Visual Assessment Unit, Commercial Assessment Unit, and the Residential Assessment Unit. The key components within this view are the city monument sign, medium-sized trees in the center of the photo, Grape Street in the foreground, I-15 and vehicles traveling it, freeway signs, a streetlight, residences, the car dealership, local hills, and the Santa Ana and Elsinore Mountains in the background. Lake Elsinore is visible in the background at the far left near the foot of the Santa Ana and Elsinore Mountains. Ornamental vegetation gives this view aesthetic value and adds a positive contrast to the surrounding manmade development. Manmade development within this view consists of paved roadways, sidewalk, median, a light pole, commercial and residential land uses, and water quality detention basins.

This page intentionally left blank

Key View 3: *View facing northeast toward the future Franklin Street Interchange from west of I-15.*

Key View 4: *View facing north toward the future Franklin Street Interchange from west of I-15.*

FIGURE 2.8.3

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Key Views 3 & 4

SOURCE: Estrada Land Planning, Inc., 2015

This page intentionally left blank

Key View 5: *View facing west toward the future Franklin Street Interchange. The photograph is taken from the residential area along Canyon View Drive from east of I-15.*

Key View 6: V*iew facing northwest toward the existing Railroad Canyon Road Interchange. The photograph is taken from the commercial area along Grape Street from east of I-15.*

FIGURE 2.8.4

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Key Views 5 & 6

SOURCE: Estrada Land Planning, Inc., 2015

This page intentionally left blank

KEY VIEW NO. 7

As illustrated in Figure 2.8.5, Key View No. 7 is a view taken from the commercial center located on Grape Street in the southeast quadrant of the I-15/Railroad Canyon Road interchange. This view faces northwest toward the existing Railroad Canyon interchange and faces the Transportation Corridor Visual Assessment Unit, Commercial Assessment Unit, and the Residential Assessment Unit. The key components within this view are the medium-sized tree in the center of the photo, Grape Street in the foreground, Railroad Canyon Road northbound off-ramp, the Railroad Canyon Road undercrossing at I-15, the I-15 freeway and vehicles along I-15, and the Santa Ana and Elsinore Mountains in the background. Ornamental vegetation and the presence of scenic features (hills and mountains) give this view aesthetic value and add a positive contrast to the surrounding manmade development. Manmade development within this view consists of paved roadways, traffic signs, commercial and residential land uses, and water quality detention basins.

KEY VIEW NO. 8

As illustrated in Figure 2.8.5, Key View No. 8 is a view from a residential perspective taken from the residences located on Grape Street in the southeast quadrant of the I-15/Railroad Canyon Road interchange. This view faces northwest toward the existing Railroad Canyon interchange and represents the Transportation Corridor Visual Assessment Unit, Commercial Assessment Unit, and the Residential Landscape Unit. The key components within this view are Grape Street in the foreground, the I-15 freeway, freeway right-of-way vegetation, streetlights, residences, commercial buildings, and the ornamental vegetation along Grape Street. The Santa Ana and Elsinore Mountains are partially visible to the left while the local hills are more evident.

KEY VIEW NO. 9

As illustrated in Figure 2.8.6, Key View No. 9 is a view taken from the commercial businesses located on Casino Drive in the southwest quadrant of the I-15/Railroad Canyon Road interchange. This view faces northeast toward the existing commercial businesses on Casino Drive and represents the Commercial Assessment Unit. The key components within this view are the ornamental trees and the existing commercial buildings. Casino Drive is visible in the foreground. This view contains water quality detention basins with metal standpipes, concrete headwalls, rip rap, chain link fencing and native grasses that do not provide memorability of this view. The encroachment features (utility poles) create a chaotic pattern on the sky that reduces the overall integrity of this view; however, the presence of trees adds to the positive visual quality of this view.

KEY VIEW NO. 10

As illustrated in Figure 2.8.6, Key View No. 10 is a view from a commuter perspective taken from the I-15 just north of the existing Franklin Street overcrossing looking north toward the future Franklin Street interchange. This view faces north and represents the Transportation Corridor Visual Assessment Unit. The key components within this view are I-15, vehicles traveling along I-15, and the hills to the east and mountains to the west. There are isolated trees along the west side of I-15 and ruderal vegetation along either side of the freeway and within the freeway median. Additionally, utility poles and lines and a billboard are also visible from this viewpoint.

This page intentionally left blank

Key View 7: *View facing northwest toward the existing Railroad Canyon Road Interchange. The photograph is taken from the commercial area along Grape Street from east of I-15.*

Key View 8: View facing northwest toward the existing Railroad Canyon Road Interchange. The photograph is taken from the commercial area along Grape Street from east of I-15.

FIGURE 2.8.5

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Key Views 7 & 8

SOURCE: Estrada Land Planning, Inc., 2015

I:\SAE1401\Reports\IS_EA\Fig2-8-5_Key_Views_7&8.cdr (10/09/2015)

This page intentionally left blank

Key View 9: *View facing east toward the existing commercial properties along Casino Drive from west of I-15.*

Key View 10: View facing north toward the future Franklin Street Interchange. The photograph is taken from the I-15 northbound lanes.

FIGURE 2.8.6

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Key Views 9 & 10

SOURCE: Estrada Land Planning, Inc., 2015

This page intentionally left blank

KEY VIEW NO. 11

As illustrated in Figure 2.8.7, Key View No. 11 is visible from Railroad Canyon Road and Auto Center Drive looking east towards the I-15 overcrossing. This view represents the Transportation Corridor Visual Assessment Unit as viewed from the commuter viewer group. The dominant features in this key view are the Santa Ana and Elsinore Mountains located in the background. The key components within this view are the I-15 overcrossing, utility poles and lines and the businesses along Railroad Canyon Road in this viewpoint. This view contains water quality detention basins with metal standpipes, concrete headwalls, rip rap, chain link fencing and native grasses that do not provide memorability of this view.

2.8.2.4 Viewer Groups

The population affected by the project is composed of viewers. Viewers are people whose views of the landscape may be altered by the project—either because the landscape itself has changed or their perception of the landscape has changed. There are two major types of viewer groups for highway projects: highway neighbors (Views to the Road) and highway users (Views from the Road). For this project the following highway neighbors and highway users were considered:

HIGHWAY NEIGHBORS (VIEWS TO THE ROAD)

- Residents in the northeast quadrant of the I-15/Railroad Canyon Road interchange
- Residents in the southwest quadrant of the I-15/Franklin Street interchange
- Commercial users associated with local businesses

HIGHWAY USERS (VIEWS FROM THE ROAD)

- Local motorists
- Regional travelers/tourists
- Commercial drivers

Each viewer group has its own particular level of viewer exposure and viewer sensitivity, resulting in distinct and predictable visual concerns for each group which help to predict its responses to visual changes.

2.8.2.5 Viewer Response

Viewer response is a measure or prediction of the viewer’s reaction to changes in the visual environment and has two dimensions, viewer exposure and viewer sensitivity. Viewer exposure is a measure of the viewer’s ability to see a particular object. Viewer sensitivity is a measure of the viewer’s recognition of a particular object.

VIEWER EXPOSURE

Viewer Exposure has three attributes defined as follows:

- **Location** relates to the position of the viewer in relationship to the object being viewed.
- **Quantity** refers to how many people see the object.
- **Duration** refers to how long a viewer is able to keep an object in view.

This page intentionally left blank

Key View 11: *View facing northeast toward the existing Railroad Canyon Road Interchange from west of I-15.*

FIGURE 2.8.7

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Key View 11

SOURCE: Estrada Land Planning, Inc., 2015

I:\SAE1401\Reports\IS_EA\Fig2-8-7_Key_View_11.cdr (10/09/2015)

This page intentionally left blank

VIEWER SENSITIVITY

Viewer Sensitivity has three attributes defined as follows:

- **Activity** relates to the preoccupation of viewers—are they preoccupied, thinking of something else, or are they truly engaged in observing their surroundings.
- **Awareness** relates to the focus of view—the focus is wide and the view general or the focus is narrow and the view specific.
- **Local values** and **attitudes** also affect viewer sensitivity.

High viewer exposure helps predict viewers that may have a response to a visual change, while high viewer sensitivity helps predict viewers that may have a high concern for any visual change.

OVERALL VIEWER RESPONSE

The following are narrative descriptions of viewer exposure and viewer sensitivity for each viewer group. The viewer exposure and viewer sensitivity for each viewer group were then merged to establish the overall viewer response of each group.

Highway Neighbors (Views to the Road)

- **Residents:** Viewers in this group have few direct views of the project from close proximity. The quantity of residents who would have views of the project is approximately twenty to thirty homes or businesses at the outer edge of the neighborhoods. Local Highway Neighbors values and attitudes reflect a desire to improve the I-15/Railroad Canyon Road interchange and ameliorate the traffic congestion, circulation and safety, as they will be exposed to those changes 24 hours per day. Therefore, the exposure and sensitivity rating is considered to be moderately high.
- **Commercial:** Area residents, business owners, and employees would have a moderate level of sensitivity to changes in the visual environment due to their familiarity with the existing conditions, their frequency of exposure, and their sense of ownership. Their awareness of the project would be low as they would likely be more focused on their ultimate destination and immediate surroundings. Therefore, the exposure and sensitivity rating for commercial users is considered to be moderately low.
- **Group Viewer Response:** Cumulative exposure rating is considered to be moderately low and a cumulative sensitivity rating is considered to be moderately high. The combination is equivalent to an overall group viewer response of moderate.

Highway Users (Views from the Road)

- **Local Motorist:** The overall quantity of the viewers would be approximately 200,000 to 250,000 viewers per day and the duration of exposure would be limited. Local motorists, due to their activity, would be focused on the roadway and traffic conditions in which they are traveling, but would have a high awareness of the project in their immediate foreground as they travel through the project due to familiarity. Most local motorists are sensitive to the recurrent congestion and overall reduction in traffic circulation and safety. As a result, local motorists would have an exposure rating considered to be moderate and sensitivity rating considered to be moderately high.
- **Region Travelers/Tourists:** Currently this group infrequently travels through the area at 65 miles per hour, however, it is anticipated that the quantity of travelers/tourists will increase. Local values and attitudes would be low since this viewer group does not live or work in the

community. Overall, this viewer group would likely be more focused on the view, and natural landscape features than on the project. Therefore, the exposure rating is considered to be low and sensitivity rating is considered to be moderately low.

- **Commercial Drivers:** Commercial drivers would view the project from the roadway on a regular basis. Although the quantity of viewers is high, the duration of exposure would be limited. Viewers in this group would have a low sensitivity to the project as they would not likely be focused on the project improvements but the wider view. The sensitivity rating is considered to be low and exposure rating is considered to be moderately low.
- **Group Viewer Response:** Local motorists that live in the region and travel through the project area regularly are the largest group amongst the highway users. The combination of moderate viewer exposure and moderately high viewer sensitivity is equivalent to an overall group viewer response of moderately high.

Viewers, or more specifically the response viewers have to changes in their visual environment, are one of two variables that determine the extent of visual impacts that would be caused by the construction and operation of the project. The other variable is the change to visual resources discussed in Section 2.8.2.6, Visual Resources and Resource Change.

2.8.2.6 Visual Resources and Resource Change

Resource change is assessed by evaluating the visual character and the visual quality of the visual resources that comprise the project corridor before and after the construction of the project. Visual resources of the project setting are defined and identified below by assessing visual character and visual quality in the project corridor. Visual resource evaluations were done for each of the eleven key views.

VISUAL CHARACTER

Visual character is descriptive and non-evaluative, which means it is based on defined attributes that are neither good nor bad. However, a change in visual character can be evaluated when it is compared with the viewer response to that change. Changes in visual character can be identified by how visually compatible a project would be with the existing condition by using visual character attributes as an indicator. For this project the following attributes were considered:

- **Form -** Visual mass or shape
- **Line -** Edges or linear definition
- **Color** - Reflective brightness (light, dark) and hue (red, green)
- **Texture -** Surface coarseness
- **Dominance -** Position, size, or contrast
- **Scale -** Apparent size as it relates to the surroundings
- **Diversity -** Variety of visual patterns
- **Continuity -** Uninterrupted flow of form, line, color, or textural pattern

EXISTING VISUAL CHARACTER

The existing I-15 roadway, through Lake Elsinore, follows the topography of the land through a mix of businesses and residential properties along the roadway. The roadway then continues beyond Lake Elsinore, maneuvering through the natural landscape features such as boulder outcroppings, oak trees, sycamores, Peruvian pepper trees and topography. The line for the roadway is accentuated by the utility poles, fencing, billboards and graded slopes. The isolated trees give this view some aesthetic value; however, the lack of abundance and the nature of the surrounding vegetation do not provide memorability. There are minimal contrasting landscape components (hills to the east and sparse vegetation) and the encroachment features (utility poles), while minimal, create a chaotic pattern. The overall presence of the manmade encroachments (utility lines and poles) and the large expanse of pavement (I-15 freeway) in the midground degrades the visual character of this view and creates a nonharmonious pattern that does not blend into the setting. The visual character of the existing viewshed is considered to be moderate.

VISUAL QUALITY

Visual quality is evaluated by identifying the vividness, intactness, and unity present in the project corridor. Public attitudes validate the assessed level of quality and predict how changes to the project corridor can affect these attitudes. This process helps identify specific methods for addressing each visual impact that may occur as a result of the project. The three criteria for evaluating visual quality are defined as follows:

- **Vividness** is the extent to which the landscape is memorable and is associated with distinctive, contrasting, and diverse visual elements.
- **Intactness** is the integrity of visual features in the landscape and the extent to which the existing landscape is free from non-typical visual intrusions.
- **Unity** is the extent to which all visual elements combine to form a coherent, harmonious visual pattern.

EXISTING VISUAL QUALITY

The I-15 corridor expresses a moderate degree of vividness as it is a somewhat memorable scene with immediate views of the rolling hills with outcroppings of boulders, oak trees, sycamores, Peruvian pepper trees and distant views of the naturalized grass-covered valley floor, mountains and peaks that define the skyline. Immediate built features such as miscellaneous buildings, paving, retaining walls and structures only slightly detract from the overall view. The I-15 corridor displays a moderate level of intactness as there is moderate intrusion of built elements upon the landscape features in the view. The primary distractions in the view are the overhead utility poles and wires, billboards and graded slopes. Other minor distractions to the view are the roadway surface and distant residences. The visual elements in the view create a moderate level of harmonious visual unity. Combining vividness, unity and intactness, the resulting overall visual quality of the existing view can be defined as moderate.

2.8.3 Environmental Consequences

2.8.3.1 Temporary Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

The No Build Alternative does not include any changes to the physical environment; therefore, no temporary impacts to visual resources would occur.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

Visual impacts would result from construction activities, including the presence of equipment, materials, and workers at the freeway interchange and staging areas, and along the streets and roads leading to the interchange. Visual impacts due to construction activities would also result from the temporary alteration of landforms and vegetation within the project area. Vehicles such as automobiles, pick-up trucks, and dump trucks would be visible. Heavy equipment such as backhoes, graders, and excavators would be prevalent. Project components and workers would be visible during site clearing, grading, lane expansion, bridge construction, site clean-up, and landscape restoration. Construction equipment and activities would be seen by various viewers in proximity to the project area, including adjacent and nearby residents, motorists on I-15 and nearby streets, and pedestrians. View durations would vary from brief to extended periods, depending on the viewer groups and viewer locations. Construction activities would be visible for those elements of the project that pass through the existing residential and commercial uses.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

As described under Alternative 2, visual impacts would result from construction activities, including the presence of equipment, materials, and workers at the freeway interchange and staging areas, and along the streets and roads leading to the interchange. Visual impacts due to construction activities would also result from the temporary alteration of landforms and vegetation within the project area. The primary difference in temporary impacts under Alternative 3 is the demolition and construction activity that would occur at the Casino Drive ramps. Construction and demolition activities would not occur at the Casino Drive ramps under Alternative 2.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

As described under Alternative 2, visual impacts would result from construction activities, including the presence of equipment, materials, and workers at the freeway interchange and staging areas, and along the streets and roads leading to the interchange. Visual impacts due to construction activities would also result from the temporary alteration of landforms and vegetation within the project area. The primary difference in temporary impacts under Alternative 4 is the construction activity and temporary closures that would occur at the intersections at Railroad Canyon Road with Lakeshore Drive, Casino Drive, Summerhill Road as well as I-15 on/off ramps. Construction activities would not occur at these intersections under either Alternative 2 or 3.

2.8.3.2 Permanent Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

The No Build Alternative does not include any changes to the physical environment; therefore, no permanent impacts to visual resources would occur. The No Build Alternative would maintain the existing interchange configuration and would not alter existing views to and from the freeway.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

Computerized visual simulations were prepared for three of the eleven Key Views to analyze and assess the potential visual effects and impacts of the project. Two of the three simulations apply to all Build Alternatives. Figures 2.8.8 and 2.8.9 depict the visual simulations for Key Views No. 3 and No. 5 for all Build Alternatives. The visual simulations for Key View No. 3 and Key View No. 5 were prepared as part of the VIA to illustrate the visual impacts of the construction of the Franklin Street interchange and local roadways. The visual simulations are strictly for conceptual analysis and are not intended to provide a precise, scaled depiction of the project; rather, they illustrate the potential future post-project visual character of the project area. Permanent visual impacts under Alternative 2 are discussed below for each Key View.

Existing View of Franklin Street Overcrossing, looking north.

Proposed View of Franklin Street Overcrossing, looking north.

FIGURE 2.8.8

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Visual Simulation at Key View 3

SOURCE: SC Engineering, 2014; Estrada Land Planning, Inc., 2015

I:\SAE1401\Reports\IS_EA\fig2-8-8_View_Sim_1.cdr (10/09/2015)

This page intentionally left blank

Existing View of Franklin Street Overcrossing, looking west.

Proposed View of Franklin Street Overcrossing, looking west.

FIGURE 2.8.9

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Visual Simulation at Key View 5

SOURCE: SC Engineering, 2014; Estrada Land Planning, Inc., 2015

I:\SAE1401\Reports\IS_EA\fig2.8.9_View_Sim_2.cdr (10/09/2015)

This page intentionally left blank

Key View No. 1

From Key View No. 1, the overall character and experience for the residential viewer group would not change under Alternative 2. The primary physical change that would occur within this view is the construction of the new Franklin Street overcrossing, the construction of the Franklin Street northbound on-ramps and off-ramps and southbound on-ramps and off-ramps, the construction and widening of a new roadway (Camino Del Norte-Canyon Estates Drive) connecting the new overcrossing with the existing street network, the construction of water quality detention basins and removal of vegetation in the vicinity of this viewpoint. Many of the improvements planned for Railroad Canyon Road, including the widening and realignment of on-ramps and off-ramps and the construction of water quality detention basins, are not visible from this vantage point. Due to the elevated vantage point of this view, implementation of Alternative 2 would not change or degrade the visual quality within this view. While there will be a physical change to the environment through the construction of a new interchange within this viewpoint, the new structure would not result in the obstruction of existing scenic features visible from this vantage point. Visual change created by the project is not expected to have a negative impact to viewer response. Minimization measures are not required.

Key View No. 2

The character and visual quality of Key View No. 2 would not be adversely affected under Alternative 2. The primary physical changes that would occur within this view would be the construction of the new Franklin Street overcrossing, the construction of the Franklin Street northbound on-ramps and off-ramps and southbound on-ramps and off-ramps, the construction and widening of a new roadway (Auto Center Drive) connecting the new overcrossing with the existing street network, the construction of water quality detention basins, and removal of vegetation in the vicinity of this viewpoint. Many of the improvements planned for Railroad Canyon Road, including the widening and realignment of on-ramps and off-ramps, are not visible from this vantage point. Due to the elevated vantage point of this view, implementation of Alternative 2 would not change or degrade the visual quality within this view. Vegetation within the I-15 right-of-way would be removed. While there will be a physical change to the environment through the construction of a new interchange within this viewpoint, the new structure would not result in the obstruction of existing scenic features visible from this vantage point. Visual change created by the project is not expected to have a negative impact to viewer response from this Key View. Minimization measures are not required.

Key View No. 3

Previously referenced Figure 2.8.8 illustrates the visual simulation of Key View No. 3. The overall visual character of Key View No. 3 would change due to the construction of the Franklin Street overcrossing and southbound on-ramps and off-ramps, realignment, widening, and extension of Auto Center Drive, and removal of vegetation. Both the southbound on-ramps and off-ramps would be elevated above existing grade to meet with the planned elevation of the new Franklin Street interchange. The Franklin Street overcrossing structure would be elevated above the planned southbound on-ramps and off-ramps. In addition, Auto Center Drive will be realigned, widened, and extended to tie into the new Franklin Street/Avenue 6 intersection. The residential visual experience would change to some degree. Many of the improvements planned for Railroad Canyon Road, including the widening and realignment of on-ramps and off-ramps, are not visible from this vantage point. This viewer group would see the southbound on-ramps and off-ramps of the new Franklin Street interchange and the elevated overcrossing structure. Additional street lighting will also be visible. However, due to the low visual quality of the existing site, visual changes under Alternative 2 are not anticipated to be substantial to Key View No. 3. Viewer response to the visual changes created by the project is expected to be positive at Key View No. 3. The visual quality would be improved due to roadway improvements and installation of vegetation. Implementation of **Minimization Measures VIS-1** through **VIS-5**, provided in Section 2.8.4, would enhance the aesthetic environment of this view.

Key View No. 4

The vacant properties visible in Key View No. 4 adjacent to and west of I-15 would be replaced by new southbound on-ramps and off-ramps, which would increase in grade to connect to the new Franklin Street overcrossing. The new Franklin Street overcrossing structure would be clearly visible crossing I-15. Residential viewers from this vantage point on Franklin Street/Casino Drive would see the new ramps and overcrossing and new water quality detention basins. While the visual character of this Key View would change considerably with the construction of the southbound on-ramps and off-ramps and overcrossing, the visual quality would not be affected to the same degree because the current setting lacks scenic resources. However, implementation of Alternative 2 would result in adverse visual impacts to the viewers located on Franklin Street/Casino Drive because of the addition of an urban structure (the new southbound on-ramps and off-ramps with the new overcrossing) to a semi-urban environment. Viewer response to the visual changes created by the project at Key View No. 4 is expected to be negative for the residents living in the Residential Assessment Unit because of the introduction of new structures in an area that is currently vacant and increased visual penetration of freeway traffic that would now be visible along this street. With implementation of **Minimization Measures VIS-1** through **VIS-5**, presented below in Section 2.8.4, the permanent visual impacts of Alternative 2 would not be adverse.

Key View No. 5

The overall visual quality and character of Key View No. 5 would change with implementation of Alternative 2. The physical changes that would occur within this Key View are the loss of the minor knoll in the midground, construction/extension of Canyon View Drive westerly resulting in an increased dominance of the roadway in the midground, a visible cut slope, the introduction of controlled intersection appurtenances, additional street lighting, and increased nighttime glare from vehicle headlights. I-15 is not visible from this vantage point and the planned Franklin Street interchange would not encroach on the scenic mountains in the background. The foreground view would remain the same, with Canyon View Drive in the center and residential units and vegetation on both sides; however, implementation of this alternative would result in substantial changes to the midground view as depicted in previously referenced Figure 2.8.9. Viewer response to the visual changes created by the project at Key View No. 5 is expected to be negative for the residents living in the Residential Assessment Unit because of the introduction of new roadways in the area and increased nighttime glare from vehicle headlights. With implementation of **Minimization Measures VIS-1** through **VIS-5**, presented below in Section 2.8.4, the permanent visual impacts of Alternative 2 would not be adverse.

Key View No. 6

The overall visual quality and character from this commercial area appears more urban. Physical changes that would occur within Key View No. 6 include the construction of a northbound deceleration lane and hook ramp connecting to Grape Street, the construction of an auxiliary lane from the new northbound hook entrance ramp at I-15/Grape Street to the new northbound exit ramp at I-15/Franklin Street, and the construction of an auxiliary lane from the new southbound entrance ramp at I-15/Franklin Street to the southbound exit ramp at I-15/Railroad Canyon Road, and the construction of water quality detention basins. Under Alternative 2, many of the improvements planned for Franklin Street, including the construction of on-ramps and off-ramps and the overcrossing, are not visible from this vantage point. This vantage point is at a higher elevation than the planned improvements; therefore, tenants and people associated with the commercial properties on Grape Street would not be negatively affected by the closer proximity of the realigned northbound on-ramps and off-ramps. Visual change created by the project is not expected to have a negative impact to viewer response. Minimization measures are not required.

Key View No. 7

The overall visual quality and character in Key View No. 7 from this commercial area appears more semi-urban due to intervening topography and trees. Physical changes that would occur within this Key View include the widening of Railroad Canyon Road under I-15 from six lanes to eight lanes, the replacement of the northbound exit ramps at Railroad Canyon Road with a hook ramp connecting Grape Street and a northbound deceleration lane (two lanes exiting the freeway and widening to three lanes approaching Grape Street), and the construction of an auxiliary lane from the new northbound hook entrance ramp at I-15/Grape Street to the new northbound exit ramp at I-15/Franklin Street, and the construction of new water quality basins. Many of the improvements planned for Franklin Street, including the construction of on-ramps and off-ramps and the overcrossing, are not visible from this vantage point. This vantage point is at a higher elevation than the planned improvements; therefore, tenants and people associated with the commercial properties on Grape Street would not be negatively affected by the closer proximity of the realigned northbound on-ramps and off-ramps. Visual change created by the project is not expected to have a negative impact to viewer response. Minimization measures are not required.

Key View No. 8

The overall visual quality and character in Key View of No. 8 from this residential area appears urban due to presence of commercial and residential structures and ornamental landscaping. Physical changes that would occur within this Key View include the replacement of the northbound exit ramps at Railroad Canyon Road with a hook ramp connecting Grape Street and a northbound deceleration lane (two lanes exiting the freeway and widening to three lanes approaching Grape Street), and the construction of an auxiliary lane from the new northbound hook entrance ramp at I-15/Grape Street to the new northbound exit ramp at I-15/Franklin Street, and the construction of water quality detention basins. Many of the improvements planned for Franklin Street, including the construction of on-ramps and off-ramps and the overcrossing, are not visible from this vantage point. This vantage point is at a higher elevation than the planned improvements; therefore, tenants and people associated with the commercial properties on Grape Street would not be negatively affected by the closer proximity of the realigned northbound on-ramps and off-ramps. Visual change created by the project is not expected to have a negative impact to viewer response. Minimization measures are not required.

Key View No. 9

The overall visual quality and character in Key View No. 9 of this mixed commercial area appears more urban. Physical changes that would occur within this Key View include the widening of the existing southbound on-ramp departing Railroad Canyon Road and the construction of water quality detention basins. Many of the improvements planned for Franklin Street, including the construction of on-ramps and off-ramps and the overcrossing, are not visible from this vantage point. Tenants and people associated with the commercial properties on Casino Drive are anticipated to be negatively affected by the closer proximity of the widened southbound off-ramp. With implementation of **Minimization Measures VIS-1** through **VIS-5**, presented below in Section 2.8.4, the permanent visual impacts of Alternative 2 would not be adverse.

Key View No. 10

The overall visual quality and character in Key View No. 10 of this transportation corridor is low. Physical changes that would occur within this Key View include the construction of the new I-15/Franklin Street interchange and overcrossing, construction of new northbound and southbound ramps, construction of an auxiliary lane from the southbound entrance ramp at I-15/Main Street to the new southbound exit ramp at I-15/Franklin Street, and the construction, realignment, widening and extension of Auto Center Drive and Camino Del Norte-Canyon Estates Drive to tie into the new Franklin Street interchange, and the construction of water quality detention basins. Many of the improvements planned for Railroad Canyon Road, including the construction of new ramps and widening of the roadway, are not visible from this vantage point. The introduction of a new interchange within this view would substantially alter the character of this viewshed; however, commuters traveling northbound along I-15 are at an incline and scenic vistas are not afforded from this vantage point. Visual change created by the project is not expected to have a negative impact to viewer response. Minimization measures are not required.

Key View No. 11

The overall visual quality and character in Key View No. 11 from this commercial area appears more semi-urban due to intervening topography and trees. Physical changes that would occur within this key view under Alternative 2 include the widening of Railroad Canyon Road under I-15 from six lanes to eight lanes, the replacement of the northbound exit ramps at Railroad Canyon Road with a hook ramp connecting Grape Street and a northbound deceleration lane (two lanes exiting the freeway and widening to three lanes approaching Grape Street), the construction of an auxiliary lane from the new northbound hook entrance ramp at I-15/Grape Street to the new northbound exit ramp at I 15/Franklin Street, and the construction of water quality detention basins. Many of the improvements planned for Franklin Street, including the construction of on-ramps and off-ramps and the overcrossing, are not visible from this vantage point. This vantage point is at a higher elevation than the planned improvements; therefore, tenants and people associated with the commercial properties on Grape Street would not be negatively affected by the closer proximity of the realigned northbound on-ramps and off-ramps. Minimization measures are not required.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

Computerized visual simulations were prepared for three of the eleven Key Views to analyze and assess the potential visual effects and impacts of the project. Again, two of the three simulations apply to all Build Alternatives. Previously referenced Figures 2.8.7 and 2.8.8 depict the visual simulations for Key Views No. 3 and No. 5 for all Build Alternatives. The visual simulations for Key View No. 3 and Key View No. 5 were prepared as part of the VIA to demonstrate the visual impacts of the construction of the Franklin Street interchange and local roadways. Permanent visual impacts under Alternative 3 are discussed below for each Key View.

Key View No. 1

The character and experience of Key View No. 1 would not change. The primary physical changes within this view would be the construction of the new Franklin Street overcrossing, the construction of the Franklin Street northbound on-ramps and off-ramps and southbound on-ramps and off-ramps, the construction and widening of a new roadway (Camino Del Norte-Canyon Estates Drive) connecting the new overcrossing with the existing street network, the construction of water quality detention basins, and removal of vegetation in the vicinity of this viewpoint. Similar to what is described for Alternative 2, many of the improvements proposed for Railroad Canyon Road, including the widening and realignment of on-ramps and off-ramps, are not visible from this vantage point. While there will be a physical change to the environment through the construction of a new interchange within this viewpoint, the new structure would not result in the obstruction of existing scenic features visible from this vantage point. Residents would not experience adverse visual impacts from the proposed improvements within Key View No. 1. Minimization measures are not required. Visual change created by the project is not expected to have a negative impact to viewer response. Minimization measures are not required.

Key View No. 2

The character and experience of Key View No. 2 would not change. The main physical changes that would occur within this view would be the construction of the new Franklin Street overcrossing, the construction of the Franklin Street northbound on-ramps and off-ramps and southbound on-ramps and off-ramps, the construction and widening of a new roadway (Auto Center Drive) connecting the new overcrossing with the existing street network, the construction of water quality basins and removal of vegetation in the vicinity of this viewpoint. Similar to what is described for Alternative 2, many of the improvements proposed for Railroad Canyon Road, including the widening and realignment of on-ramps and off-ramps, are not visible from this vantage point. The visual quality of Key View No. 2 would not decrease for the residential group because of the elevation of this vantage point. While there will be a physical change to the environment due to the construction of a new interchange within this viewpoint, the new structure would not result in the obstruction of existing scenic features visible from this vantage point. Visual change created by the project is not expected to have a negative impact to viewer response. No minimization measures are required.

Key View No. 3

The visual character of Key View No. 3 would change due to the construction of the Franklin Street overcrossing and southbound on-ramps and off-ramps, realignment, widening, and extension of Auto Center Drive, and removal of vegetation. Both the southbound on-ramps and off-ramps would be elevated above existing grade to meet with the proposed elevation of the new Franklin Street interchange. The Franklin Street overcrossing structure would be elevated above the proposed southbound on-ramps and off-ramps. In addition, Auto Center Drive will be realigned, widened, and extended to tie into the new Franklin Street/Avenue 6 intersection. Many of the improvements proposed for Railroad Canyon Road, including the widening and realignment of on-ramps and off-ramps, are not visible from this vantage point. Similar to what is described under Alternative 2, the residential viewer group would be affected by the proposed changes. Although the character of the site will change, the visual quality at Key View No. 3 would remain the same as the existing visual quality is low. Visual change created by the project is not expected to have a negative impact to viewer response. Minimization measures are not required.

Key View No. 4

The visual changes to Key View No. 4 would also change considerably due to the introduction of an urban structure in a previously semi-urban area. The visual character of this key view would change considerably with the construction of the southbound on-ramps and off-ramps and overcrossing; however, the visual quality would not be affected to the same degree because the current setting lacks scenic resources. Implementation of Alternative 3 would result in adverse visual impacts to the viewers located on Franklin Street/Casino Drive. Viewer response to the visual changes created by the project at Key View No. 4 is expected to be negative for the residents living in the Residential Assessment Unit because of the introduction of new structures in an area that is currently vacant and increased visual penetration of freeway traffic that would now be visible along this street. With implementation of **Minimization Measures VIS-1** through **VIS-5**, presented below in Section 2.8.4, the permanent visual impacts of Alternative 3 would not be adverse.

Key View No. 5

The overall visual quality and character of Key View No. 5 would change with implementation of Alternative 3. The physical changes that would occur within this Key View are the loss of the minor knoll in the midground, construction/extension of Canyon View Drive westerly resulting in an increased dominance of the roadway in the midground, a visible cut slope, the introduction of controlled intersection appurtenances, additional street lighting, and increased nighttime glare from vehicle headlights. I-15 is not visible from this vantage point and the proposed Franklin Street interchange would not encroach on the scenic mountains in the background. The foreground view would remain the same, with Canyon View Drive in the center and residential units and vegetation on both sides; however, implementation of this alternative would result in substantial changes to the midground view as depicted in previously referenced Figure 2.8.8. Viewer response to the visual changes created by the project at Key View No. 5 is expected to be negative for the residents living in Residential Assessment Unit because of the introduction of new roadways in the area and increased nighttime glare from vehicle headlights. With implementation of **Minimization Measures VIS-1** through **VIS-5**, presented below in Section 2.8.4, the permanent visual impacts of Alternative 3 would not be adverse.

Key View No. 6

Under Alternative 3, the overall visual character and quality of Key View No. 6 would be the same as under Alternative 2. This vantage point is at a higher elevation than the proposed improvements; therefore, tenants and people associated with the commercial properties on Grape Street would not be negatively affected by the closer proximity of the realigned northbound on-ramps and off-ramps. While Alternative 3 includes new hook ramps for the southbound I-15, they are not visible from this vantage point. Visual change created by the project is not expected to have a negative impact to viewer response. Minimization measures are not required.

Key View No. 7

Under Alternative 3, the overall visual character and quality of Key View No. 7 would be the same as under Alternative 2. However, rather than widening Railroad Canyon Road under I-15 to eight lanes, Alternative 3 would result in the widening of Railroad Canyon Road under I-15 to six lanes. This vantage point is at a higher elevation than the proposed improvements; therefore, tenants and people associated with the commercial properties on Grape Street would not be negatively affected by the closer proximity of the realigned northbound on-ramps and off-ramps. While Alternative 3 includes new hook ramps for the southbound I-15, they are not visible from this vantage point. Visual change created by the project is not expected to have a negative impact to viewer response. Minimization measures are not required.

Key View No. 8

Under Alternative 3, the overall visual character and quality of Key View No. 8 would be the same as under Alternative 2. This vantage point is at a higher elevation than the proposed improvements; therefore, tenants and people associated with the commercial properties on Grape Street would not be negatively affected by the closer proximity of the realigned northbound on-ramps and off-ramps. While Alternative 3 includes new hook ramps for the southbound I-15, they are not visible from this vantage point. Visual change created by the project is not expected to have a negative impact to viewer response. Minimization measures are not required.

Key View No. 9

Physical changes that would occur within Key View No. 9 include the elimination of the southbound entrance ramp at Railroad Canyon Road, the construction of replacement hook ramps connecting to Casino Drive and a southbound hook entrance ramp with three lanes departing Casino Drive, tapering to one acceleration lane before entering the freeway, and the construction of a southbound auxiliary lane from the new southbound entrance ramp at I-15/Franklin Street to the southbound exit ramp at I-15/Casino Drive, and the construction of water quality detention basins. Many of the improvements proposed for Franklin Street, including the construction of on-ramps and off-ramps and the overcrossing, are not visible from this vantage point. Implementation of Alternative 3 would require the partial acquisition of existing businesses along Casino Drive to allow the construction of the new hook ramps. While the removal of buildings within this vantage point would open up views northeast toward the hills, it would also result in the removal of ornamental trees and vegetation, which may potentially degrade this view. Tenants and people associated with the commercial properties on Casino Drive are anticipated to be negatively affected by the introduction of southbound hook ramps. With implementation of **Minimization Measures VIS-1** through **VIS-5**, presented below in Section 2.8.4, the permanent visual impacts of Alternative 3 would not be adverse.

Key View No. 10

The overall visual character and quality of Key View No. 10 would be the same as under Alternative 2. The introduction of a new interchange within this view would substantially alter the character of this viewshed; however, commuters traveling northbound along I-15 are at an incline and scenic vistas are not afforded from this vantage point. While Alternative 3 includes new hook ramps for the southbound I-15, they are not visible from this vantage point. Visual change created by the project is not expected to have a negative impact to viewer response. Minimization measures are not required.

Key View No. 11

Under Alternative 3, the overall visual character and quality of Key View No. 11 would be the same as under Alternative 2. However, rather than widening Railroad Canyon Road under I-15 to eight lanes, Alternative 3 would result in the widening of Railroad Canyon Road under I-15 to six lanes. As previously identified, commercial viewer sensitivity from this view is moderate. While Alternative 3 includes new hook ramps for the southbound I-15, they are not visible from this vantage point. Visual change created by the project is not expected to have a negative impact to viewer response. Minimization measures are not required.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

Computerized visual simulations were prepared for three of the eleven Key Views to analyze and assess the potential visual effects and impacts of the project. All three simulations apply to Build Alternative 4. Previously referenced Figures 2.8.7 and 2.8.8 depict the visual simulations for Key Views No. 3 and No. 5 for all Build Alternatives. The visual simulations for Key View No. 3 and Key View No. 5 were prepared as part of the VIA to demonstrate the visual impacts of the construction of the Franklin Street interchange and local roadways. Figure 2.8.9 depicts the visual simulation for Key View No. 11, under Alternative 4. The visual simulation for Key View No. 11 was prepared as part of the VIA to demonstrate the visual impacts of the construction of the Railroad Canyon Road interchange roundabouts. Permanent visual impacts under Alternative 4 are discussed below for each Key View.

Key View No. 1

The main physical changes within Key View No. 1 under Alternative 4 would be the construction of the new Franklin Street overcrossing, the construction of the Franklin Street northbound on-ramps and off-ramps and southbound on-ramps and off-ramps, the construction and widening of a new roadway (Camino Del Norte-Canyon Estates Drive) connecting the new overcrossing with the existing street network, and removal of vegetation in the vicinity of this viewpoint. Similar to what is described for Alternative 2, many of the improvements proposed for Railroad Canyon Road, including the widening and realignment of on-ramps and off-ramps and the construction of water quality detention basins, are not visible from this vantage point. While there will be a physical change to the environment through the construction of a new interchange within this viewpoint, the new structure would not result in the obstruction of existing scenic features visible from this vantage point. Residents would not experience adverse visual impacts from the proposed Alternative 4 improvements within Key View No. 1. Visual change created by the project is not expected to have a negative impact to viewer response. Minimization measures are not required.

Key View No. 2

The overall character and experience of Key View No. 2 would not change under Alternative 4. The main physical changes that would occur within this view would be the construction of the new Franklin Street overcrossing, the construction of the Franklin Street northbound on-ramps and off-ramps and southbound on-ramps and off-ramps, the construction and widening of a new roadway (Auto Center Drive) connecting the new overcrossing with the existing street network, the construction of water quality detention basins, and removal of vegetation in the vicinity of this viewpoint. Similar to what is described for Alternative 2, many of the improvements proposed for Railroad Canyon Road, including the widening and realignment of on-ramps and off-ramps, are not visible from this vantage point. The visual quality of Key View No. 2 would not decrease for the residential group under proposed Alternative 4 because of the elevation of this vantage point. While there will be a physical change to the environment due to the construction of a new interchange within this viewpoint, the new structure would not result in the obstruction of existing scenic features visible from this vantage point. Visual change created by the project is not expected to have a negative impact to viewer response. No minimization measures are required.

Key View No. 3

Under Alternative 4 the overall visual character of Key View No. 3 would change due to the construction of the Franklin Street overcrossing and southbound on-ramps and off-ramps, realignment, widening, and extension of Auto Center Drive, and removal of vegetation. Both the southbound on-ramps and off-ramps would be elevated above existing grade to meet with the proposed elevation of the new Franklin Street interchange. The Franklin Street overcrossing structure would be elevated above the proposed southbound on-ramps and off-ramps. In addition, Auto Center Drive will be realigned, widened, and extended to tie into the new Franklin Street/Avenue 6 intersection. Under Alternative 4, many of the improvements proposed for Railroad Canyon Road, including the widening and realignment of on-ramps and off-ramps, are not visible from this vantage point. This viewer group would see the southbound on-ramps and off-ramps of the new Franklin Street interchange and the elevated overcrossing structure. Additional street lighting would also be visible. The residential viewer group would be affected by the proposed changes. With implementation of **Minimization Measures VIS-1** through **VIS-5**, presented below in Section 2.8.4, the permanent visual impacts of Alternative 4 would not be adverse.

Key View No. 4

Implementation of Alternative 4 would change Key View No. 4 considerably. The vacant properties visible adjacent to and west of I-15 would be replaced by new southbound on-ramps and off-ramps, which would increase in grade to connect to the new Franklin Street overcrossing. The new Franklin Street overcrossing structure would be clearly visible crossing I-15. Residential viewers from this vantage point on Franklin Street/Casino Drive would see the new ramps and overcrossing and new water quality detention basins. The visual character of this key view would change considerably with the construction of the southbound on-ramps and off-ramps and overcrossing; however, the visual quality would not be affected to the same degree because the current setting is lacking scenic resources. Viewer response to the visual changes created by the project at Key View No. 4 is expected to be negative for the residents living in the Residential Assessment Unit because of the introduction of new structures in an area that is currently vacant and increased visual penetration of freeway traffic that would now be visible along this street. With implementation of **Minimization Measures VIS-1** through **VIS-5**, presented below in Section 2.8.4, the permanent visual impacts of Alternative 4 would not be adverse.

Key View No. 5

The overall visual quality and character of Key View No. 5 would change with implementation of Alternative 4. The physical changes that would occur within this Key View are the loss of the minor knoll in the midground, construction/extension of Canyon View Drive westerly resulting in an increased dominance of the roadway in the midground, a visible cut slope, the introduction of controlled intersection appurtenances, additional street lighting, and increased nighttime glare from vehicle headlights. I-15 is not visible from this vantage point and the proposed Franklin Street interchange would not encroach on the scenic mountains in the background. The foreground view would remain the same, with Canyon View Drive in the center and residential units and vegetation on both sides; however, implementation of this alternative would result in substantial changes to the midground view as depicted in previously referenced Figure 2.8.9. Viewer response to the visual changes created by the project at Key View No. 5 is expected to be negative for the residents living in the residential assessment unit because of the introduction of new roadways in the area and increased nighttime glare from vehicle headlights. With implementation of **Minimization Measures VIS-1** through **VIS-5**, presented below in Section 2.8.4, the permanent visual impacts of Alternative 4 would not be adverse.

Key View No. 6

Physical changes that would occur and are visible within Key View No. 6 include the construction of a multilane roundabouts at the intersection of Railroad Canyon Road, Grape Street and Summerhill Drive, the construction of a multilane roundabout at the intersection of Railroad Canyon Road and the I-15 Northbound exit/entrance ramps, and the construction of water quality detention basins. Under Alternative 4, many of the improvements proposed for Franklin Street, including the construction of onramps and off-ramps and the overcrossing, are not visible from this vantage point. This vantage point is at a higher elevation than the proposed improvements; therefore, tenants and people associated with the commercial properties on Grape Street would not be negatively affected by the closer proximity of the realigned northbound on-ramps and off-ramps. With implementation of **Minimization Measures VIS-1** through **VIS-6**, presented below in Section 2.8.4, the permanent visual impacts of Alternative 4 would not be adverse.

Key View No. 7

Physical changes that would occur within Key View No. 7 under Alternative 4 include the replacement of the northbound exit ramps at Railroad Canyon Road with a multilane roundabout connecting Grape Street and Summerhill Drive, the construction of a multilane roundabout at the intersection of Railroad Canyon Road and the I-15 northbound on-ramps and off-ramps, and the construction of water quality detention basins. Under Alternative 4, many of the improvements proposed for Franklin Street, including the construction of on-ramps and off-ramps and the overcrossing, are not visible from this vantage point. This vantage point is at a higher elevation than the proposed improvements; therefore, tenants and people associated with the commercial properties on Grape Street would not be negatively affected by the closer proximity of the realigned northbound on-ramps and off-ramps. With implementation of **Minimization Measures VIS-1** through **VIS-6**, presented below in Section 2.8.4, the permanent visual impacts of Alternative 4 would not be adverse.

Key View No. 8

The overall visual quality and character in Key View No. 8 from this residential area appears urban due to presence of commercial and residential structures and ornamental landscaping to the right. Physical changes that would occur within this key view under Alternative 4 include the replacement of the northbound on-ramps and off-ramps at Railroad Canyon Road with a multilane roundabout connecting Grape Street and Summerhill Drive and a northbound deceleration lane, the construction of an auxiliary lane from the new northbound entrance ramp at I-15/Railroad Canyon Road to the new northbound on-ramps and off-ramps at I-15/Franklin Street, and the construction of water quality detention basins. Under Alternative 4, many of the improvements proposed for Franklin Street, including the construction of on-ramps and off-ramps and the overcrossing, are not visible from this vantage point. This vantage point is at a higher elevation than the proposed improvements; therefore, tenants and people associated with the residential properties on Grape Street would not be negatively affected by the closer proximity of the realigned northbound onramps and off-ramps. With implementation of **Minimization Measures VIS-1** through **VIS-6**, presented below in Section 2.8.4, the permanent visual impacts of Alternative 4 would not be adverse.

Key View No. 9

The overall visual quality and character in Key View No. 9 of this mixed commercial area appears more urban. Physical changes that would occur within this key view include the widening of the existing southbound on-ramp departing Railroad Canyon Road and the construction of water quality detention basins. Under Alternative 4, many of the improvements proposed for Franklin Street, including the construction of on-ramps and off-ramps and the overcrossing, are not visible from this vantage point. Tenants and people associated with the commercial properties on Casino Drive are anticipated to be negatively affected by the closer proximity of the widened southbound off-ramp. With implementation of **Minimization Measures VIS-1** through **VIS-5**, presented below in Section 2.8.4, the permanent visual impacts of Alternative 4 would not be adverse.

Key View No. 10

The overall visual quality and character of this transportation corridor in Key View No. 10 is low. Physical changes that would occur within this key view include the construction of the new I-15/ Franklin Street interchange and overcrossing, construction of new northbound and southbound ramps, construction of an auxiliary lane from the southbound entrance ramp at I-15/Main Street to the new southbound exit ramp at I-15/Franklin Street, the construction, realignment, widening and extension of Auto Center Drive and Camino Del Norte-Canyon Estates Drive to tie into the new Franklin Street interchange, and the construction of water quality detention basins. Under Alternative 4, many of the improvements proposed for Railroad Canyon Road, including the construction of new roundabouts and widening of the roadway, are not visible from this vantage point. The introduction of a new interchange within this view would substantially alter the character of this viewshed; however, commuters traveling northbound along I-15 travel are at an incline and scenic vistas are not afforded from this vantage point. Visual change created by the project is not expected to have a negative impact to viewer response. Minimization measures are not required.

Key View No. 11

Physical changes that would occur within Key View No. 11 under Alternative 4 include the replacement of the northbound exit ramps at Railroad Canyon Road with a multilane roundabout connecting Grape Street and Summerhill Drive, the construction of a multilane roundabout at the intersection of Railroad Canyon Road and the I-15 northbound on-ramps and off-ramps, and the construction of water quality detention basins. Figure 2.8.10 depicts the visual simulation for Key View No. 11 to demonstrate the visual impacts of the construction of the Railroad Canyon Road interchange roundabout. Under Alternative 4, many of the improvements proposed for Franklin Street, including the construction of on-ramps and off-ramps and the overcrossing, are not visible from this vantage point. This vantage point is at a higher elevation than the proposed improvements; therefore, tenants and people associated with the commercial properties on Grape Street would not be negatively affected by the closer proximity of the realigned northbound on-ramps and off-ramps. Minimization measures are not required.

CEQA DISCUSSION

Would the project:

I. a) Have a substantial adverse effect on a scenic vista?

No Impact. The City's General Plan identifies the following features as scenic resources within the City: Lake Elsinore, Cleveland National Forest, Santa Ana and Elsinore Mountains, rugged hills, ridgelines, rocky outcroppings, streams, vacant land with native vegetation, buildings of historical and cultural significance, parks, and trails. Visual resources afforded from areas surrounding the project site consist of the Sedco Hills to the south; portions of Lake Elsinore, the Santa Ana Mountains, Elsinore Mountains, and the Cleveland National Forest to the west; and hillsides to the north and east. As concluded in the *Visual Impact Assessment*[1] (VIA) (July 2015) prepared for the project, implementation of the project would not result in impacts to scenic vistas available to surrounding residents, commercial tenants, and commuters. Surrounding residential and commercial property in the vicinity of the project site sits at an elevation higher than the elevation of the proposed improvements; therefore, implementation of the project would not result in the obstruction of scenic vistas currently afforded to these properties. While the new Franklin Street Interchange is an elevated structure that would be constructed in an area currently devoid of any elevated structures, commuters traveling along I-15 are traveling along a slope and scenic vistas are not afforded in either direction in the vicinity of the new interchange. Therefore, no impacts to scenic vistas would occur, and no mitigation is required.

I. b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a State Scenic Highway?

---

1 Estrada Land Planning, Inc. 2015. *Visual Impact Assessment Interstate 15/Railroad Canyon Road Interchange Project*. July.

<u>Less Than Significant Impact.</u> No historic buildings, rock outcroppings, or scenic resources are identified on the project site as the project site currently is developed with roadways and freeway structures. Existing roadways include Railroad Canyon Road, Casino Drive, Auto Center Drive, Franklin Street and I-15. However, none of the surrounding City roads or I-15 are identified as officially designated scenic highways.[1] While the project segment of I-15 is identified as an eligible State Scenic Highway, the project segment of I-15 is not currently officially designated as a scenic highway. Since there are no State-designated scenic highways located within the City of Lake Elsinore; the project would not damage scenic resources within a State Scenic Highway. However, as identified in the City's General Plan, it is the City's policy to "maintain and improve the quality of existing landscaping in parkways, parks, civic facilities, rights-of-way, and other public areas." Construction of the project may result in the removal of adjacent trees and other mature vegetation within the I-15 right-of-way.

Minimization Measures VIS-1 through **VIS-3** and **VIS-6,** presented below in Section 2.8.4, have been identified to minimize impacts related to the removal of trees and mature vegetation during construction of the project. Adherence to **Minimization Measures VIS-1** through **VIS-3** and **VIS-6** would ensure that impacts associated with this issue remain less than significant.

I. c) Substantially degrade the existing visual character or quality of the site and its surroundings?

<u>Less Than Significant Impact.</u> The project site is generally linear, spanning approximately 2.7 miles. The visual character of the project site is primarily vacant land and modern single-family neighborhoods in the northern portion of the project limits. In the vicinity of the Railroad Canyon Road interchange, the visual character of the site is primarily unified modern commercial and modern high-density residential buildings. The southern portion of the project site transitions into a rural residential character. Construction of the project would introduce a new elevated structure and interchange in the northern portion of the project site. Reconfigured interchanges would be constructed at Railroad Canyon Road. Construction of the project would alter the current aesthetic condition of the project site. While degradation of the site would not likely occur with implementation of the project, a change in the existing visual character and quality of the site would occur.

While impacts are not considered significant, **Minimization Measure VIS-4**, presented below in Section 2.8.4, has been identified to minimize impacts related to the change in visual quality and character during construction and operation of the project. Adherence to **Minimization Measure VIS-4** would ensure impacts associated with this issue remain less than significant.

I. d) Create a new source of substantial light or glare, which would adversely affect day or nighttime views in the area?

<u>Less Than Significant Impact.</u> Mount Palomar Observatory, located in San Diego County, is located approximately 32.7 miles southeast of the project site. Generally, to ensure that nighttime skies will not be brightened, observatories need to be sited 30 to 40 miles from large lighted areas. Riverside County Ordinance 655 has established two zones, which both create radii around the Palomar Observatory. Zone A is the circular ring area centered on Palomar Observatory with a 15-mile radius; Zone B is a circular ring area, with a 45-mile radius, centered on Palomar Observatory that extends from the outer limit of Zone A to the end of the 45-mile radius area.

[1] Caltrans. 2017. *Officially Designated State Scenic Highways.* Website: http://www.dot.ca.gov /hq/LandArch /16_ livability/scenic_highways/index.htm (accessed September 30, 2015).

The project site is located within Zone B of the Mount Palomar Nighttime Lighting Policy Area. The ordinance restricts the permitted use of certain light fixtures emitting undesirable light rays into the night sky, which may have a detrimental effect on astronomical observation and research at the Mt. Palomar Observatory. As stated in Section 5(A) of Ordinance 655, "… low-pressure sodium lamps are the preferred illuminating source" in the Mount Palomar Nighttime Lighting Policy Area. Other types of lighting systems are permitted in parking areas as long as they do not exceed 4,050 lumens. Lighting "allowed" under Ordinance 655 must be fully shielded (if feasible) and partially shielded in all other cases, and must be focused to minimize spill light into the night sky and onto adjacent properties. Due to the City's proximity to the Mount Palomar Observatory, the City encourages the use of low pressure sodium lighting for development. The City incorporates standards detailed in Ordinance 655 in Section 17.112.040 of the City's Municipal Code, which states that all outdoor lighting fixtures in excess of 60 watts must be oriented and shielded to prevent direct overhead illumination and prevent any glare or direct illumination on adjacent properties or streets.[1]

The existing project site and vicinity receive light at night from traffic, street lighting, and lighted parking lots; signalization at the intersections and freeway on-ramps and off-ramps; and from the commercial zone and limited light sources from residential development. Existing lighting on the streets and along the ramps would be modified or relocated as a part of the project, where required.

The site is located within an urbanizing area of the City that already experiences some levels of light and/or glare from the existing buildings, vehicles, and streetlights. Light and glare from lighting fixtures and vehicles entering/exiting the project site after project implementation would generally be similar to the existing condition in the project area. However, the relocation of lighting fixtures and the installation of lighting fixtures on the new overcrossing would introduce new light sources in areas without existing lighting fixtures, potentially affecting residents of the single-family neighborhood in the vicinity of the new overcrossing.

While impacts are not considered significant, **Minimization Measure VIS-5**, presented below in Section 2.8.4, and **Minimization Measure AN-8**, presented in Section 2.20.4, have been identified to minimize impacts related to the relocation or installation of new lighting fixtures and the effect on nearby sensitive uses. Adherence to the applicable lighting standards established by City ordinance, adherence to City development standards, and the preparation of a lighting plan required by **Minimization Measure VIS-5** would ensure no significant lighting impacts would occur as a result of development of the project.

2.8.4 Avoidance, Minimization, and/or Mitigation Measures

This section describes additional avoidance, minimization, and/or mitigation measures to address specific visual impacts. These would be designed and implemented with concurrence of the District Landscape Architect. The following measures to avoid or minimize visual impacts would be incorporated into the project:

VIS-1 Prior to construction, the City of Lake Elsinore shall locate construction and staging areas within the City, the County of Riverside, the California Department of Transportation (Caltrans), and/or freeway rights-of-way. The City shall also

[1] City of Lake Elsinore. Municipal Code Section 17.112.040 *Lighting.* Website: http://www.codepublishing.com/CA/lakeelsinore/ (accessed October 5, 2009).

require construction access and staging areas to be located within the maximum project disturbance footprint.

VIS-2 Prior to construction, the City shall adopt a landscape plan that is compatible with the Interstate 15 (I-15) Corridor Improvement Plan and is incorporated into the final design of the I-15/Railroad Canyon Road interchange project. This plan shall identify all opportunities to use areas within the project limits for revegetation and it shall include landscaping for graded areas with plant species consistent with adjacent vegetation and enhancement of new project structures to the extent feasible. This plan shall incorporate all applicable procedures and requirements as detailed in Caltrans 's *Highway Design Manual,* Section 902.1, Planting Guidelines (November 2001), and the City of Lake Elsinore General Plan.

The landscape plan shall include the following components, as feasible:

- Maintain the visual planting character of the I-15 corridor;
- Plant drought-resistant plants along the I-15 corridor to promote use of xeric (adapted to arid conditions) landscaping techniques;
- Incorporate soil erosion control plants into the embankments and within the areas of steeper slopes; and
- Create water quality basins that blend into the surrounding landscape.

VIS-3 The City shall be required to save existing mature trees, where practical. The City shall also implement its Palm Tree Preservation Program for palm trees that exceed 5 feet in height measured from the ground at the base of the trunk to the base of the crown. If removal of mature trees cannot be avoided, the City shall require that a tree replacement ratio of 1:1 be implemented and additional landscape improvements be incorporated into the final design.

VIS-4 The City shall incorporate attractive walls, medians, and other visually pleasing hardscape into the final design of the I-15/Railroad Canyon Road Interchange project. This may include, but is not limited to, potential aesthetic enhancements for retaining walls and other structures, in the final design of the Railroad Canyon Road Interchange Project and the new Franklin Street overcrossing. The location and design of retaining walls along Railroad Canyon Road and Franklin Street off-ramps and on-ramps will require compliance with Caltrans standards for safety.

VIS-5 A lighting plan shall be reviewed and approved by the City and Caltrans prior to construction. The lighting fixtures shall be designed to minimize glare on adjacent properties and into the night sky. Lighting shall be shielded with non-glare hoods and focused within the project right-of-way.

Key View 11: *View facing northeast toward the existing Railroad Canyon Road Interchange from west of I-15.*

Key View 11: *View facing northeast toward the proposed Railroad Canyon Road Interchange from west of I-15.*

FIGURE 2.8.10

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Visual Simulation at Key View 11

SOURCE: SC Engineering, 2014; Estrada Land Planning, Inc., 2015

I:\SAE1401\Reports\IS_EA\Fig2-8-10_Key_View_11ExistProposed.cdr (10/09/2015)

This page intentionally left blank

2.9 Cultural Resources

2.9.1 Regulatory Setting

The term “cultural resources,” as used in this document, refers to the “built environment” (e.g., structures, bridges, railroads, water conveyance systems, etc.), places of traditional or cultural importance, and archaeological sites (both prehistoric and historic), regardless of significance. Under federal and state laws, cultural resources that meet certain criteria of significance are referred to by various terms including “historic properties,” “historic sites,” “historical resources,” and “tribal cultural resources.” Laws and regulations dealing with cultural resources include:

The National Historic Preservation Act (NHPA) of 1966, as amended, sets forth national policy and procedures for historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for listing in the National Register of Historic Places (NRHP). Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties and to allow the Advisory Council on Historic Preservation (ACHP) the opportunity to comment on those undertakings, following regulations issued by the ACHP (36 Code of Federal Regulations [CFR] 800). On January 1, 2014, the First Amended Section 106 Programmatic Agreement (PA) among the Federal Highway Administration (FHWA), the ACHP, the California State Historic Preservation Officer (SHPO), and the Department went into effect for Department projects, both state and local, with FHWA involvement. The PA implements the ACHP’s regulations, 36 CFR 800, streamlining the Section 106 process and delegating certain responsibilities to the Department. The FHWA’s responsibilities under the PA have been assigned to the Department as part of the Surface Transportation Project Delivery Program (23 United States Code [USC] 327).

The Archaeological Resources Protection Act (ARPA) applies when a project may involve archaeological resources located on federal or tribal land. The ARPA requires that a permit be obtained before excavation of an archaeological resource on such land can take place.

Historic properties may also be covered under Section 4(f) of the U.S. Department of Transportation Act, which regulates the “use” of land from historic properties (in Section 4(f) terminology—historic sites). See Appendix B for specific information about Section 4(f).

The California Environmental Quality Act (CEQA) requires the consideration of cultural resources that are historical resources and tribal cultural resources, as well as “unique” archaeological resources. California Public Resources Code (PRC) Section 5024.1 established the California Register of Historical Resources (CRHR) and outlined the necessary criteria for a cultural resource to be considered eligible for listing in the CRHR and, therefore, a historical resource. Historical resources are defined in PRC Section 5020.1(j). In 2014, Assembly Bill 52 (AB 52) added the term “tribal cultural resources” to CEQA, and AB 52 is commonly referenced instead of CEQA when discussing the process to identify tribal cultural resources (as well as identifying measures to avoid, preserve, or mitigate effects to them). Defined in PRC Section 21074(a), a tribal cultural resource is a CRHR or local register eligible site, feature, place, cultural landscape, or object which has a cultural value to a California Native American tribe. Tribal cultural resources must also meet the definition of a historical resource. Unique archaeological resources are referenced in PRC Section 21083.2.

PRC Section 5024 requires state agencies to identify and protect state-owned historical resources that meet the NRHP listing criteria. It further requires the Department to inventory state-owned structures in its rights-of-way. Sections 5024(f) and 5024.5 require state agencies to provide notice to and consult with the State Historic Preservation Officer (SHPO) before altering, transferring, relocating, or demolishing state-owned historical resources that are listed on or are eligible for inclusion in the NRHP or are registered or eligible for registration as California Historical Landmarks. Procedures for compliance with PRC Section 5024 are outlined in a Memorandum of Understanding (MOU)[1] between the Department and SHPO, effective January 1, 2015. For most Federal-aid projects on the State Highway System, compliance with the Section 106 PA will satisfy the requirements of PRC Section 5024.

2.9.2 Affected Environment

This section is based on the following documents prepared for the project:

- *Historic Property Survey Report* (HPSR) (August 2011)
- *Archaeological Survey Report* (ASR) (August 2011)
- *Supplemental Historic Property Survey Report* (Supplemental HPSR) (January 2015)

An Area of Potential Effects (APE) was developed for the project as part of the HPSR (August 2011). For the Supplemental HPSR (January 2015), a revised APE was established on January 14, 2015. The APE includes all areas in which the project has the potential to directly or indirectly affect historic properties, if any such properties exist. These include the horizontal and vertical areas proposed for (1) direct effects associated with ground-disturbing activities including, but not limited to, existing and proposed right-of-way, temporary and permanent construction easements, proposed sound and retaining walls, and staging areas; and (2) indirect effects that are the result of visual, noise, or other effects. The area of indirect effects generally includes all developed properties that are adjacent to the proposed direct effects unless those effects are limited to minor improvements (such as pavement striping) that have no potential to indirectly affect adjacent properties. The APE extends around the entirety of those parcels where the built environment may be directly or indirectly affected.

2.9.2.1 Records Search

For the HPSR (August 2011), a records search and literature review were conducted on August 5, 2009, at the Eastern Information Center (EIC) of the California Historical Resources Information System (CHRIS), located at the University of California, Riverside. The following historical resources files, inventories, and listings were consulted:

- 2001 Archaeological Determinations of Eligibility
- 2002 National Register of Historic Places Properties
- 1992 California Register of Historical Resources
- 1976 California Inventory of Historic Resources
- 1995 California Historical Landmarks
- 1992 California Points of Historical Interest

In addition, background research on historical/archaeological resources was conducted for the APE using published literature on local and regional history, online sources, historical aerial photographs and maps of the project vicinity, and newspaper articles.

[1] The MOU is located on the SER at http://www.dot.ca.gov/ser/vol2/5024mou_15.pdf.

No additional records searches were conducted as part of the Supplemental HPSR (January 2015) because the proposed improvements associated with Alternative 4 would be within the previously identified APE.

2.9.2.2 Field Survey

An intensive pedestrian field survey of the APE was conducted from March 31 to April 2, 2010. No additional field surveys were conducted as a result of Alternative 4 because the proposed improvements associated with Alternative 4 would be within the previously identified APE. The APE survey was conducted by walking transects spaced approximately 15 meters apart, with particular attention given to the mapped locations of previously documented archaeological resources. Approximately 20 percent of the surface was visible, with substantial obstruction by vegetation, development, and roadway. The majority of the project APE was disturbed by development, roadway construction, earthmoving, and weed-abatement disking activities.

One archaeological resource (CA-RIV-2765) was identified within the APE by the archival research. During the survey, it was determined that site CA-RIV-2765 has been removed by commercial development. One historic-period can scatter and one 1940s residence were identified within the APE during the survey. No other cultural resources were identified during the survey.

2.9.2.3 Native American Consultation

Four individuals representing three Native American groups were contacted via certified mail and email on September 21, 2009 (Willie Pink, Luiseño; Joseph Ontiveros, Soboba Band of Luiseño) and May 4, 2010 (Anna Hoover and Paul Macarro, Pechanga Band of Luiseño Indians; consultation was also reinitiated with Mr. Ontiveros). Letters were followed up by telephone calls during October and December 2009. Mr. Ontiveros (Soboba Band of Luiseño Indians) indicated the project area is regarded as highly sensitive by the Soboba and requested Native American monitoring of the project, continuity of consultation, initiation of consultation with the project developer and landowner, and transmittal of information in the event of late discovery of cultural materials new developments. Caltrans responded to a Pechanga request for information pertaining to cultural resources within and adjacent to the project APE on November 4, 2010.

No additional Native American consultation was conducted as part of the Supplemental HPSR (January 2015).

Consultation letters were mailed on February 9, 2017, to the tribes who had originally consulted with Caltrans under Section 106 for this project. Two tribes responded and requested meetings to discuss the project. On February 16, 2017, Caltrans met with the Soboba Band of Luiseño Indians to discuss the project. On March 1, 2017, Caltrans met with the Pechanga Band of Luiseño Indians to discuss the project, and additional discussion with the Pechanga Band of Luiseño Indians occurred on March 9, 2017. Because of the general sensitivity of the area surrounding the project footprint, both tribes have requested monitoring of any ground disturbance of native soils during construction. As project designs are finalized, additional review by the tribes may eliminate areas that require monitoring.

2.9.2.4 Resources within the APE

The records search and literature review conducted for the HPSR (August 2011) indicated that 53 cultural resources studies have been previously conducted within a 1-mile radius of the APE. Six studies included portions of the APE, but none of these documented cultural resources. One prehistoric resource (a milling complex, CA-RIV-2765) was documented within the APE. Twenty-seven additional archaeological resources are located within a 1-mile radius of the project. The prehistoric archaeological resources include a habitation site (CA-RIV-3504), two artifact scatters with milling features (CA-RIV-2506 and CA-RIV-4037), eight lithic scatters (CA-RIV-2275, -2764, -3505, -3506, -4037, -4042, -4647, and -4648), and 13 isolated artifacts (see HPSR, Attachment D, records search results letter for resource numbers). The historic archaeological resources include a railroad bridge and associated features (CA-RIV-3832H), a refuse scatter (CA-RIV-7927), and an isolated artifact (33-15945). Thirty-six historic built resources are also documented within 1 mile of the project (residential and commercial buildings).

There are seven bridges within the project APE. These include Railroad Canyon Road Undercrossings (Bridge Nos. 56 0714L and 56 0714R), Franklin Street Overcrossing (Bridge No. 56 0715), San Jacinto River (Bridge Nos. 56 0728L and 56 0728R), and Main Street Undercrossings (Bridge Nos. 56 0382L and 56 0382R). According to Caltrans bridge inventories, all seven of the bridges are Category 5 (not eligible for the National Register); therefore, none of the bridges were evaluated as part of this study.

If cultural materials are discovered during construction, all earthmoving activity within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find.

If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall cease in any area or nearby area suspected to overlie remains, and the County of Riverside Coroner contacted. Pursuant to PRC Section 5097.98, if the remains are thought to be Native American, the coroner will notify the Native American Heritage Commission (NAHC) who will then notify the Most Likely Descendant (MLD). At this time, the person who discovered the remains will contact the District 8 Environmental Branch Chief so that they may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.

2.9.3 Environmental Consequences

2.9.3.1 Temporary Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

The No Build Alternative does not involve any construction activities or improvements; therefore, no temporary impacts to cultural resources would occur.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

Alternative 2 would require ground disturbance and modification to existing freeway structures and additional roadway features. These construction activities could result in impacts to unknown buried cultural materials or human remains. Any impacts to buried resources would be considered permanent; therefore, an analysis of temporary impacts is not applicable.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

Alternative 3 would require ground disturbance and modification to existing freeway structures and additional roadway features. These construction activities could result in impacts to unknown buried cultural materials or human remains. Any impacts to buried resources would be considered permanent; therefore, an analysis of temporary impacts is not applicable.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

Alternative 4 would require ground disturbance and modification to existing freeway structures and additional roadway features. These construction activities could result in impacts to unknown buried cultural materials or human remains. Any impacts to buried resources would be considered permanent; therefore, an analysis of temporary impacts is not applicable.

2.9.3.2 Permanent Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

The No Build Alternative does not include any changes to the physical environment; therefore, no impacts to cultural resources would occur.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

Based on the results of the HPSR (2011), the ASR (2011), and the Supplemental HPSR (2015), it was determined that the only cultural resources within the project APE do not appear to be eligible for inclusion in the National Register, do not qualify as a “historical resource” pursuant to CEQA, or are exempt per the Section 106 PA.

One historic-period can scatter and one 1940s residence were identified within the APE during the survey; however, both of these resources meet the criteria for exemption from evaluation under Attachment 4 of Caltrans’ Programmatic Agreement. None of these resources appears to be eligible for inclusion in the National Register or to qualify as a “historical resource” pursuant to CEQA as identified in the HPSR. Therefore, Caltrans has determined a finding of “No Historic Properties Affected.” Because no historic properties were identified in the APE, there are no Section 4(f) historic sites or properties.

Although considered unlikely, there is the potential to encounter unknown buried cultural materials, tribal cultural resources, or human remains within the APE during construction of this alternative. In the event that previously unknown buried cultural materials or human remains are encountered during construction, compliance with standard **Measures CR-1** through **CR-4**, provided below, would avoid and/or minimize potential impacts to previously unknown cultural resources, tribal cultural resources, or human remains.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

Based on the results of the HPSR (2011) the ASR (2011), and the Supplemental HPSR (2015), it was determined that the only cultural resources within the project APE do not appear to be eligible for inclusion in the National Register, do not qualify as a “historical resource” pursuant to CEQA, or are exempt per the Section 106 PA. Impacts to cultural resources identified for Alternative 3 would the same as those identified for Alternative 2. In the event that previously unknown buried cultural materials, tribal cultural resources, or human remains are encountered during construction, compliance with standard **Measures CR-1** through **CR-4**, provided below, would avoid and/or minimize potential impacts to previously unknown cultural resources, tribal cultural resources, or human remains under this alternative.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

Based on the results of the HPSR (2011) the ASR (2011), and the Supplemental HPSR (2015), it was determined that the only cultural resources within the project APE do not appear to be eligible for inclusion in the National Register, do not qualify as a “historical resource” pursuant to CEQA, or are exempt per the Section 106 PA. Impacts to cultural resources identified for Alternative 4 would be the same as those identified for Alternative 2. In the event that previously unknown buried cultural materials, tribal cultural resources, or human remains are encountered during construction, compliance with standard **Measures CR-1** through **CR-4**, provided below, would avoid and/or minimize potential impacts to previously unknown cultural resources or human remains under this alternative.

CEQA Discussion

Would the project:

V. a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?

No Impact. Based on the results of the *Historic Property Survey Report* (2011),[1] the *Archaeological Survey Report* (2011),[2] and *Supplemental Historic Property Survey Report* (2015),[3] it was determined that the only cultural resources within the project limits do not appear to be eligible for inclusion in the National Register and do not qualify as "historical resources." One historic-period can scatter and one 1940s residence were identified within the APE during the survey; however, both of these resources meet the criteria for exemption from evaluation under Attachment 4 of the Caltrans Programmatic Agreement. None of these resources appears to be eligible for inclusion in the National Register or to qualify as a "historical resource" pursuant to CEQA as identified in the HPSR. Since no historic resources are located within the project, no significant impact to any historic resources would result from implementation of the project. No mitigation is required.

V. b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

Less Than Significant Impact. Implementation of the project would involve soil disturbance within the project limits. Therefore, there is the potential for archaeological resources to be uncovered during the course of ground-disturbing activities. **Minimization Measure CR-1**, a standard condition, presented below in Section 2.9.4, has been identified in the event that cultural resources are discovered during the course of ground-disturbing activities. Adherence to **Minimization Measure CR-1** would minimize impacts associated with this issue and ensure impacts remain less than significant.

V. d) Disturb any human remains, including those interred outside of formal cemeteries?

Less Than Significant Impact. The majority of the project study area is currently developed with existing infrastructure features (e.g., roadways, interchanges). The project would also require the acquisition of vacant property. However, no evidence exists in the record to suggest the project site has been used for human burials. The California Health and Safety Code (Section 7050.5) states that if human remains are discovered on site, no further disturbance shall occur until the County Coroner has made a determination of origin and disposition pursuant to Public Resources Code Section 5097.98. **Minimization Measure CUL-2**, a standard condition, presented below in Section 2.9.4, has been identified in the event that human remains are discovered during the course of any ground-disturbing activities. Adherence to **Minimization Measure CUL-2** would minimize impacts associated with this issue and ensure impacts remain less than significant.

---

1 LSA Associates, Inc. 2011. *Historic Property Survey Report I-15/Railroad Canyon Road Interchange Project.* August.

2 LSA Associates, Inc. 2011. *Archaeological Survey Report for the I-15/Railroad Canyon Road Interchange Project*. August.

3 LSA Associates, Inc. 2015. *Supplemental Historic Property Survey Report I-15/Railroad Canyon Road Interchange Project*. January.

XVII. a) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k)?

Less Than Significant Impact. Based on the results of the *Historic Property Survey Repor*t (2011),[1] the *Archaeological Survey Report* (2011),[2], and the *Supplemental Historic Property Survey Report* (2015),[3] it was determined that the only cultural resources within the project limits do not appear to be eligible for inclusion in the National Register and do not qualify as "historical resources." One historic-period can scatter and one 1940s residence were identified within the APE during the survey; however, both of these resources meet the criteria for exemption from evaluation under Attachment 4 of the Caltrans Programmatic Agreement. None of these resources appears to be eligible for inclusion in the California Register, or in a local register of historical resources as identified in the HPSR.

Based on comments provided by the Pechanga Band of Luiseño Indians, the project site and vicinity has been identified as an area of cultural sensitivity with the potential to contain tribal cultural resources (TCRs) based on their historic cultural affiliation to the project area. Avoidance and minimization measures to address cultural resources have been identified and included in this Final IS/EA in Section 2.9.4, Resources, Avoidance, Minimization, and/or Mitigation Measures. Specific measures to address potential impact to TCRs include **Minimization Measures CR-3** and **CR-4**, presented below in Section 2.9.4. Consultation under CEQA and Section 106 of the NHPA for the IS/EA was completed as of March 31, 2017. Consultation will continue during the design and construction phase of the project as described in **Minimization Measures CR-3** and **CR-4**." With implementation of these minimization measures, impacts would remain less than significant.

XVII. b) Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is: A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1. In applying the criteria set forth in subdivision (c) of public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Less Than Significant Impact. Good faith government-to-government consultation took place pre-AB 52 compliance and is documented in Chapter 3 of the Final IS/EA. AB 52 is triggered with the publication of a Notice of Intent to adopt a Negative Declaration or a Mitigated Negative Declaration after July 1, 2015. AB 52 government-to-government consultation was initiated with Tribes that have notified Caltrans in writing to consult on any projects within the area of this

---

1 LSA Associates, Inc. 2011. *Historic Property Survey Report I-15/Railroad Canyon Road Interchange Project*. August.

2 LSA Associates, Inc. 2011. *Archaeological Survey Report for the I-15/Railroad Canyon Road Interchange Project*. August.

3 LSA Associates, Inc. 2015. *Supplemental Historic Property Survey Report I-15/Railroad Canyon Road Interchange Project*. January.

project on February 9, 2017. All consulting Tribes are in receipt of an AB 52 consultation letter from Caltrans.

A meeting was held with the Soboba Band of Luiseno on February 16, 2017, and a meeting was held with the Pechanga Band of Luiseno Indians on March 1, 2017. Additional discussions with the Pechanga Band occurred on March 9, 2017.

During the AB 52 consultation meetings, both Tribes made very similar statements and requests. During the Section 106 cultural study, no cultural resources had been identified within the project footprint. In the years since the original study was conducted, cultural resources were discovered in the areas surrounding the project footprint. Because of the general sensitivity of the area surrounding the project footprint, both Tribes have requested monitoring of any ground disturbance of native soils during construction.

To ensure that the project would not result in a substantial adverse change in the significance of a tribal cultural resource, **Minimization Measures CR-1** through **CR-4** have been identified and are presented below in Section 2.9.4. Adherence to **Minimization Measures CR-1** through **CR-4** would ensure that impacts remain less than significant.

2.9.4 Avoidance, Minimization, and/or Mitigation Measures

The measures below are required to minimize the potential project impacts related to the discovery of previously unknown cultural materials and human remains during construction:

Minimization Measures

CR-1 If cultural materials are discovered during construction, all earthmoving activity within and around the immediate discovery area shall be diverted until a qualified archaeologist can assess the nature and significance of the find.

CR-2 If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall cease in any area or nearby area suspected to overlie remains, and the County of Riverside Coroner shall be contacted. Pursuant to Public Resources Code (PRC) Section 5097.98, if the remains are thought to be Native American, the Coroner shall notify the Native American Heritage Commission (NAHC), which shall then notify the Most Likely Descendant (MLD). At this time, the person who discovered the remains shall also contact the District 8 Environmental Branch Chief so that the California Department of Transportation may work with the MLD on the respectful treatment and disposition of the remains. Further provisions of PRC 5097.98 are to be followed as applicable.

CR-3 Project grading plans shall be provided to the Soboba Band of Luiseño Indians and the Pechanga Band of Luiseño Indians for review prior to any ground-disturbing activities within native soils. The need for Native American monitoring of ground-disturbing activities within native soils shall be evaluated and agreed to by the California Department of Transportation (Caltrans) District 8 Native American Coordinator, tribal representatives, a qualified archaeological monitor, and the City of Lake Elsinore's Public Works Director, or designee.

CR-4 Prior to the start of any ground-disturbing activities, a Monitoring and Discovery Plan shall be prepared. The Monitoring and Discovery Plan will define the monitoring protocol and the procedures for addressing the discovery of cultural resources and/or tribal cultural resources.

If cultural resources or tribal cultural resources are encountered during disturbances in native soils, the qualified archaeological monitor shall be empowered to redirect construction away from the area of the find in order to assess its significance.

At the time of the assessment, the qualified archaeological monitor may require the initiation of an archaeological testing program that would include the recordation of artifacts and controlled removal of the materials, as well as sampling of the area surrounding the find to delineate its horizontal and vertical extent. If the find is determined to be significant or is a unique archaeological and/or tribal cultural resource, a data recovery program shall be conducted to recover an adequate sample from the site to mitigate any impacts by the project.

At the completion of all disturbances within native soils during project construction, the archaeological monitor shall provide a report documenting the monitoring conducted on the site, including a discussion of any cultural and/or tribal cultural resources encountered during construction, how those resources were addressed and documented, any data recovery program, and where any artifacts were curated.

This page intentionally left blank

Physical Environment

2.10 Hydrology and Floodplain

2.10.1 Regulatory Setting

Executive Order (EO) 11988 (Floodplain Management) directs all federal agencies to refrain from conducting, supporting, or allowing actions in floodplains unless it is the only practicable alternative. The Federal Highway Administration requirements for compliance are outlined in 23 Code of Federal Regulations (CFR) 650 Subpart A.

To comply, the following must be analyzed:

- The practicability of alternatives to any longitudinal encroachments
- Risks of the action
- Impacts on natural and beneficial floodplain values
- Support of incompatible floodplain development
- Measures to minimize floodplain impacts and to preserve/restore any beneficial floodplain values impacted by the project.

The base floodplain is defined as “the area subject to flooding by the flood or tide having a one percent chance of being exceeded in any given year.” An encroachment is defined as “an action within the limits of the base floodplain.”

2.10.2 Affected Environment

This section is based on the following documents prepared for the project:

- *Floodplain Evaluation Report Summary* (July 2010)
- *Location Hydraulics Study* (July 2010)
- *Water Quality Assessment Report* (WQAR) (June 2010)
- *Water Quality Assessment Supplemental Memorandum* (January 2015)

The project is within the San Jacinto Valley Watershed Basin and Temescal Creek. The San Jacinto River crosses Interstate 15 (I-15) north of the Railroad Canyon Road undercrossing and ultimately drains into Lake Elsinore. The project area is mapped on three Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRMs). From north to south, the map numbers for the maps covering the project area are FIRM No. 06065C2043G (August 28, 2008), FIRM No. 06065C2041G (August 28, 2008), and FIRM No. 06065C2037G (August 28, 2008). A project segment of I-15 from the San Jacinto River to north of the existing Franklin Street overcrossing is in Zone A of the 100-year floodplain (Wash “D”), which represents that no Base Flood Elevations have been determined.

Floodplains and wetlands in their natural or relatively undisturbed state provide natural and beneficial water resource values (e.g., natural moderation of floods, water quality maintenance, and groundwater recharge), living resource values (e.g., fish, wildlife, and plant species), and cultural resource values (e.g., open space, archaeological and historical resources, natural beauty, scientific study, outdoor education, and recreation). In the project area, stormwater runoff from I-15 (approximately 0.4 mile north of the existing Franklin Street overcrossing to 1.0 mile south of the existing Railroad Canyon Road undercrossing) is collected in the median drainage system, which eventually discharges into the San Jacinto River. Stormwater runoff from I-15 (approximately 0.4 mile north of the existing Franklin Street overcrossing to Main Street) is collected in the median drainage system and routed to the City of Lake Elsinore's (City) storm drain systems before discharging into Temescal Creek.

Beneficial water resource values are identified in the Santa Ana Regional Water Quality Control Board's (RWQCB) *Water Quality Control Plan for the Santa Ana Region* (Basin Plan, updated February 2016, to include approved amendments). The following intermittent beneficial uses were identified in the Santa Ana RWQCB's Basin Plan (*Santa Ana River Basin Water Quality Control Plan*) for the San Jacinto Valley Watershed Basin:

- REC-1: Body-contact recreation (swimming/wading)
- REC-2: Nonbody-contact recreation (boating/fishing)
- WARM: Warm-water habitat for fish amenable for reproduction in warm water
- WILD: Habitat for wild plants and animals

Beneficial uses identified in Reach 5 of Temescal Creek include the following:

- AGR: Agriculture
- GWR: Groundwater recharge
- RARE: Habitat for rare (threatened/endangered) plants and animals
- REC-1: Body-contact recreation (swimming/wading)
- REC-2: Nonbody-contact recreation (boating/fishing)
- WARM: Warm-water habitat for fish amenable for reproduction in warm water
- WILD: Habitat for wild plants and animals

The San Jacinto Valley Watershed Basin and Reach 5 of Temescal Creek are not listed on the 2010 Clean Water Act (CWA) Section 303(d) List of Water Quality Limited Segments. However, Lake Elsinore is listed on the 303(d) List for Nutrients, Organic Enrichment/Low Dissolved Oxygen, Polychlorinated biphenyls (PCBs), Sedimentation Toxicity and Unknown Toxicity with potential sources being "Unknown Non-point Source" or Urban Runoff/Storm Sewers." Temescal Creek (Reach 6) is classified as a 303(d) Impaired Water Body listed for Indicator Bacteria.

2.10.3 Environmental Consequences

2.10.3.1 Temporary Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

The No Build Alternative would not result in the construction of any improvements within a floodplain. Therefore, the No Build Alternative would not result in temporary adverse impacts related to natural and beneficial floodplain values.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

Construction activities have the potential to affect the intermittent beneficial water resource values of Temescal Creek and the San Jacinto River. As discussed in detail in Section 2.11, Water Quality and Storm Water Runoff, potential impacts to water quality could occur during construction of the project due to increased erosion or accidental spills. However, Best

Management Practices (BMPs), including erosion control measures, would be implemented during construction of the project to reduce impacts to water quality and beneficial water resource values. Therefore, construction of the project would not result in short-term adverse impacts to natural and beneficial floodplain values.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

Similar to what was identified for Alternative 2, construction activities associated with Alternative 3 have the potential to affect the intermittent beneficial water resource values of Temescal Creek and the San Jacinto River. Although potential impacts to water quality could occur during construction of the project due to increased erosion or accidental spills, BMPs would be implemented. These include erosion control measures and would be implemented during construction of the project to reduce impacts to water quality and beneficial water resource values. Therefore, construction of the project would not result in short-term adverse impacts to natural and beneficial floodplain values.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

Similar to what was identified for Alternative 2, construction activities associated with Alternative 4 have the potential to affect the intermittent beneficial water resource values of Temescal Creek and the San Jacinto River. Although potential impacts to water quality could occur during construction of the project due to increased erosion or accidental spills, BMPs would be implemented. These include erosion control measures and would be implemented during construction of the project to reduce impacts to water quality and beneficial water resource values. Therefore, construction of the project would not result in short-term adverse impacts to natural and beneficial floodplain values.

2.10.3.2 Permanent Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

The No Build Alternative would not result in the construction of any improvements that would result in changes to the hydrology of the San Jacinto River, Temescal Creek, or associated floodplains. Therefore, the No Build Alternative would not result in permanent adverse impacts related to floodplains.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

There is no planned construction work at the San Jacinto River for this alternative; however, the planned new interchange at I-15/Franklin Street is within Wash “D” (Zone A of the 100-year floodplain). The new Franklin Street northbound exit ramps, new Franklin Street, and Canyon View Estates would encroach on Wash “D” in the 100-year floodplain. The construction would discharge embankment material into the Wash “D” streambed; however, the encroachment of the project would be above the 100-year flood elevation. To minimize impacts to the floodplain (Wash “D”), the project would include drainage improvements (lined concrete channels and reinforced concrete boxes) to convey storm flow.

A “significant encroachment,” as defined in 23 CFR 650.105(q), is a highway encroachment that would result in (1) a significant potential for interruption or termination of a transportation facility that is needed for emergency vehicles or provides a community’s only evacuation, (2) a significant risk, or (3) a significant adverse impact on natural and beneficial floodplain values.

As identified in the *Floodplain Evaluation Report Summary* (July 2010), there would be no significant floodplain-related risks to life or property associated with implementation of the project. In addition, the *Location Hydraulic Study* (July 2010), concluded that there was a low flooding risk associated with Alternative 2. The Conceptual Drainage Analysis determined that the project would not adversely affect local drainage facilities and that the City's storm drain system could accommodate the increase in storm flows from the project.

The project would require modifications to the existing local drainage structures, but would not alter the existing drainage pattern of downstream areas or lead to downstream flooding. There are no substantial floodplain-related risks to life or property associated with implementation of the project. In addition, the project would not promote incompatible floodplain development.

As documented in the Natural Environment Study (NES), Wash "D," north of the existing Franklin Street overcrossing is located in "Disturbed Riversidean Sage Scrub" and "non-native grassland". The project would result in permanent impacts to approximately 1.6 acres of the Wash "D" streambed due to placement of embankment fill for the new roadway improvements, right-of-way, and drainage improvements (lines concrete channels and reinforced concrete boxes) to convey storm flow. However, measures to minimize impacts and preserve natural and beneficial floodplain values would be included as part of the project implementation.

Because implementation of the project would not result in a significant change in the capacity of Wash "D" to carry water, alter the existing drainage pattern of downstream areas, or lead to downstream flooding, no measureable impacts would occur to the 100-year floodplain elevation.

With implementation of the identified measure, the planned encroachment would not result in any adverse impacts on the natural and beneficial floodplain values, would not result in a substantial change in flood risks or damage, and does not have substantial potential for interruption or termination of emergency services or emergency routes.

Therefore, the project does not constitute a significant floodplain encroachment as defined in 23 CFR 650.105.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

For Alternative 3, there is no proposed construction work within the San Jacinto River. The proposed interchange at I-15/Franklin Street would still occur under this alternative. Therefore, all hydraulic and floodplain impacts associated with this interchange as identified in Alternative 2 would still occur under Alternative 3.

The new Franklin Street northbound exit ramps, new Franklin Street, and Canyon View Estates would encroach on Wash "D" in the 100-year floodplain. Although construction would discharge embankment material into the Wash "D" streambed; as identified in the *Floodplain Evaluation Report Summary* (July 2010), there would be no significant floodplain-related risks to life or property associated with implementation of the project. In addition, the *Location Hydraulic Study* (July 2010), concluded that there was a low flooding risk associated with Alternative 3 and the encroachment of the project would be above the 100-year flood elevation. To minimize impacts to the floodplain (Wash "D"), the project would include drainage improvements (lined concrete channels and reinforced concrete boxes) to construction of retaining walls and wing walls within embankment areas convey storm flow.

The proposed encroachment would not result in any adverse impacts on the natural and beneficial floodplain values, would not result in a substantial change in flood risks or damage, and does not have substantial potential for interruption or termination of emergency services or emergency routes.

Therefore, the project does not constitute a significant floodplain encroachment as defined in 23 CFR 650.105.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

For Alternative 4, there is no proposed construction work within the San Jacinto River. The proposed interchange at I-15/Franklin Street would still occur under this alternative. Therefore, all hydraulic and floodplain impacts associated with this interchange as identified in Alternative 2 would still occur under Alternative 4.

The new Franklin Street northbound exit ramps, new Franklin Street, and Canyon View Estates would encroach on Wash “D” in the 100-year floodplain. Although construction would discharge embankment material into the Wash “D” streambed; as identified in the *Floodplain Evaluation Report Summary* (July 2010), there would be no significant floodplain-related risks to life or property associated with implementation of the project. In addition, the *Location Hydraulic Study* (July 2010), concluded that there was a low flooding risk associated with Alternative 3 and the encroachment of the project would be above the 100-year flood elevation. To minimize impacts to the floodplain (Wash “D”), the project would include drainage improvements (lined concrete channels and reinforced concrete boxes) to construction of retaining walls and wing walls within embankment areas convey storm flow.

The proposed encroachment would not result in any adverse impacts on the natural and beneficial floodplain values, would not result in a substantial change in flood risks or damage, and does not have substantial potential for interruption or termination of emergency services or emergency routes.

Therefore, the project does not constitute a significant floodplain encroachment as defined in 23 CFR 650.105.

CEQA DISCUSSION

Would the project:

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

Less Than Significant Impact. The project would encroach on Wash “D” in the 100-year floodplain. The construction would discharge embankment material into the Wash “D” streambed; however, the encroachment of the project would be above the 100-year flood elevation. The project would require modifications to the existing local drainage structures, but would not alter the existing drainage pattern of downstream areas or lead to downstream flooding. In addition, the project would not promote incompatible floodplain development. The project would result in permanent impacts to approximately 1.6 acres (0.7 hectare) of the Wash “D” streambed due to placement of embankment fill for the new roadway improvements, right-of-way, and drainage improvements (lines concrete channels and reinforced concrete boxes) to convey storm flow. However, measures to minimize impacts and preserve natural and beneficial floodplain values would be included as part of the project implementation. These standard conditions would comply with the U.S. Army Corps of Engineers (USACE) standards for not restricting seasonal channel flood capacity. Adherence to standard conditions would ensure impacts remain below a level of significance.

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

Less Than Significant Impact. Refer to CEQA Response a) above, No stream courses or points of discharge will be altered as a result of project implementation. Adherence to standard conditions would ensure impacts remain below a level of significance.

IX. g) Place housing within a 100-year flood hazard area as mapped on a Federal Flood Hazard Boundary of Flood Insurance Rate Map or other flood hazard delineation map?

No Impact. The project would not place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary of Flood Insurance Rate Map or other flood hazard delineation map as the project is an infrastructure project. As such, the project does not involve housing. Because no housing structures would be located within the 100-year flood hazard area, no impacts would occur, and no mitigation is required.

IX. h) Place within a 100-year flood hazard area structures, which would impede or redirect flood flows?

No Impact. The project does not propose the placement of any permanent structures within a 100-year flood hazard area. Therefore, the project would not result in the impediment or redirection of flood flows. As a result, no impacts would occur, and no mitigation measures are required.

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

No Impact. The project would result in the construction of improvements to existing roadways and interchanges within the project area. Although portions of the project site are in an area that could be inundated by 100-year flooding, the project would not construct habitable buildings within a designated flood area or within an identified dam inundation area. Consequently, the project would not expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam. No impacts would occur, and no mitigation required.

IX. j) Expose people or structures to inundation by seiche, tsunami, or mudflow?

Less Than Significant Impact. The project is located near the east corner of Lake Elsinore and is not located in an area that is subject to mudflows or tsunamis. A seiche is a standing wave in an enclosed or partially enclosed body of water (similar to the sloshing of water in a bathtub). Seiches have been observed on larger lakes, reservoirs, harbors and bays, and in smaller ocean areas that are substantially surrounded by land. In contrast to larger bodies of water, Lake Elsinore is relatively small rectangular lake (less than 2 miles wide and about 3 miles long). Because the project site is located near Lake Elsinore, there is potential that a seismic event could result in a seiche. However, because of the nature of the project (interchange and roadway improvements), it is anticipated that, in the event of a seiche, damage to the project site would not be significant as no permanent buildings are located on site. Therefore, impacts associated with this issue would be less than significant and no mitigation measures are required.

2.10.4 Avoidance, Minimization, and/or Mitigation Measures

Based on the analysis contained in Section 2.10, the project is not anticipated to have impacts associated with Hydrology and Floodplains. Therefore, no avoidance, minimization, and/or mitigation measures are required. However, to address potential impacts from construction of the project, measures to minimize potential temporary construction impacts and long-term operational impacts on the natural and beneficial floodplain values related to water quality are discussed in Section 2.11, Water Quality and Storm Water Runoff.

This page intentionally left blank

2.11 Water Quality and Storm Water Runoff

2.11.1 Regulatory Setting

2.11.1.1 Federal Requirements: Clean Water Act

In 1972 Congress amended the Federal Water Pollution Control Act, making the addition of pollutants to the waters of the United States (U.S.) from any point source unlawful unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. This act and its amendments are known today as the Clean Water Act (CWA), Congress has amended the act several times. In the 1987 amendments, Congress directed dischargers of storm water from municipal and industrial/construction point sources to comply with the NPDES permit scheme. The following important CWA sections are:

- Sections 303 and 304 require states to promulgate water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for a federal license or permit to conduct any activity, which may result in a discharge to waters of the U.S. to obtain certification from the State that the discharge will comply with other provisions of the act. This is most frequently required in tandem with a Section 404 permit request (see below).
- Section 402 establishes the NPDES, a permitting system for the discharges (except for dredge or fill material) of any pollutant into waters of the U.S. Regional Water Quality Control Boards (RWQCB) administer this permitting program in California. Section 402(p) requires permits for discharges of storm water from industrial/construction and municipal separate storm sewer systems (MS4s).
- Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the U.S. This permit program is administered by the U.S. Army Corps of Engineers (USACE).

The goal of the CWA is “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.”

The USACE issues two types of 404 permits: General and Standard permits. There are two types of General permits: Regional permits and Nationwide permits. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to allow a variety of minor project activities with no more than minimal effects.

Ordinarily, projects that do not meet the criteria for a Nationwide Permit may be permitted under one of the USACE’s Standard permits. There are two types of Standard permits: Individual permits and Letters of Permission. For Standard permits, the USACE decision to approve is based on compliance with U.S. Environmental Protection Agency’s Section 404 (b)(1) Guidelines (U.S. EPA Code of Federal Regulations [CFR] 40 Part 230), and whether the permit approval is in the public interest. The Section 404(b)(1) Guidelines (Guidelines) were developed by the U.S. EPA in conjunction with the USACE, and allow the discharge of dredged or fill material into the aquatic system (waters of the U.S.) only if there is no practicable alternative which would have less adverse effects. The Guidelines state that the USACE may not issue a permit if there is a least environmentally damaging practicable alternative (LEDPA) to the proposed discharge that would have lesser effects on waters of the U.S. and not have any other significant adverse environmental consequences. According to the Guidelines, documentation is needed that a sequence of avoidance, minimization, and compensation measures has been followed, in that order. The Guidelines also restrict permitting activities that violate water quality or toxic effluent[1] standards, jeopardize the continued existence of listed species, violate marine sanctuary protections, or cause "significant degradation" to waters of the U.S. In addition, every permit from the USACE, even if not subject to the Section 404(b)(1) Guidelines, must meet general requirements. See 33 CFR 320.4. A discussion of the LEDPA determination, if any, for the document is included in the Wetlands and Other Waters section.

2.11.1.2 State Requirements: Porter-Cologne Water Quality Control Act

California's Porter-Cologne Act, enacted in 1969, provides the legal basis for water quality regulation within California. This act requires a "Report of Waste Discharge" for any discharge of waste (liquid, solid, or gaseous) to land or surface waters that may impair beneficial uses for surface and/or groundwater of the state. It predates the CWA and regulates discharges to waters of the state. Waters of the state include more than just waters of the U.S., like groundwater and surface waters not considered waters of the U.S. Additionally, it prohibits discharges of "waste" as defined, and this definition is broader than the CWA definition of "pollutant." Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements (WDRs) and may be required even when the discharge is already permitted or exempt under the CWA.

The State Water Resources Control Board (SWRCB) and RWQCBs are responsible for establishing the water quality standards (objectives and beneficial uses) required by the CWA and regulating discharges to ensure compliance with the water quality standards. Details about water quality standards in a project area are included in the applicable RWQCB Basin Plan. In California, Regional Boards designate beneficial uses for all water body segments in their jurisdictions and then set criteria necessary to protect these uses. As a result, the water quality standards developed for particular water segments are based on the designated use and vary depending on that use. In addition, the SWRCB identifies waters failing to meet standards for specific pollutants. These waters are then state-listed in accordance with CWA Section 303(d). If a state determines that waters are impaired for one or more constituents and the standards cannot be met through point source or non-point source controls (NPDES permits or WDRs), the CWA requires the establishment of Total Maximum Daily Loads (TMDLs). TMDLs specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed.

2.11.1.3 State Water Resources Control Board and Regional Water Quality Control Boards

The SWRCB administers water rights, sets water pollution control policy, and issues water board orders on matters of statewide application, and oversees water quality functions throughout the state by approving Basin Plans, TMDLs, and NPDES permits. RWCQBs are responsible for protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility.

- National Pollutant Discharge Elimination System (NPDES) Program

  Municipal Separate Storm Sewer Systems (MS4)

  Section 402(p) of the CWA requires the issuance of NPDES permits for five categories of storm water discharges, including Municipal Separate Storm Sewer Systems (MS4s). An MS4 is defined as "any conveyance or system of conveyances (roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, and storm drains) owned or operated by a state, city, town, county, or other public body

[1] The U.S. EPA defines "effluent" as "wastewater, treated or untreated, that flows out of a treatment plant, sewer, or industrial outfall."

having jurisdiction over storm water, that is designed or used for collecting or conveying storm water." The SWRCB has identified Caltrans as an owner/operator of an MS4 under federal regulations. Caltrans' MS4 permit covers all Caltrans rights-of-way, properties, facilities, and activities in the state. The SWRCB or the RWQCB issues NPDES permits for 5 years, and permit requirements remain active until a new permit has been adopted.

Caltrans' MS4 Permit (Order No. 2012-0011-DWQ) was adopted on September 19, 2012, and became effective on July 1, 2013. The permit has three basic requirements:

1. Caltrans must comply with the requirements of the Construction General Permit (see below);
2. Caltrans must implement a year-round program in all parts of the State to effectively control storm water and non-storm water discharges; and
3. Caltrans storm water discharges must meet water quality standards through implementation of permanent and temporary (construction) Best Management Practices (BMPs), to the Maximum Extent Practicable (MEP), and other measures as the SWRCB determines to be necessary to meet the water quality standards.

To comply with the permit, Caltrans developed the Statewide Storm Water Management Plan (SWMP) to address storm water pollution controls related to highway planning, design, construction, and maintenance activities throughout California. The SWMP assigns responsibilities within Caltrans for implementing storm water management procedures and practices as well as training, public education and participation, monitoring and research, program evaluation, and reporting activities. The SWMP describes the minimum procedures and practices Caltrans uses to reduce pollutants in storm water and non-storm water discharges. It outlines procedures and responsibilities for protecting water quality, including the selection and implementation of BMPs. The project will be programmed to follow the guidelines and procedures outlined in the latest SWMP to address storm water runoff.

Construction General Permit

Construction General Permit (Order No. 2009-0009-DWQ), adopted on September 2, 2009, became effective on July 1, 2010. The permit regulates storm water discharges from construction sites that result in a Disturbed Soil Area (DSA) of one acre or greater, and/or include smaller sites that are part of a larger common plan of development. By law, all storm water discharges associated with construction activity where clearing, grading, and excavation result in soil disturbance of at least one acre must comply with the provisions of the General Construction Permit. Construction activity that results in soil disturbances of less than one acre is subject to this Construction General Permit 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 storm water pollution prevention plans; to implement sediment, erosion, and pollution prevention control measures; and to obtain coverage under the Construction General Permit.

The 2009 Construction General Permit separates projects into Risk Levels 1, 2, or 3. Risk levels are determined during the planning and design phases, and are based on potential erosion and transport to receiving waters. Requirements apply according to the Risk Level determined. For example, a Risk Level 3 (highest risk) project would require compulsory storm water runoff pH and turbidity monitoring, and before construction and after construction aquatic biological assessments during specified seasonal windows. For all projects subject to the permit, applicants are required to develop and implement an effective Storm Water Pollution Prevention Plan (SWPPP). In accordance with Caltrans' Standard

Specifications, a Water Pollution Control Plan (WPCP) is necessary for projects with DSA less than one acre.

2.11.1.4 Section 401 Permitting

Under Section 401 of the CWA, any project requiring a federal license or permit that may result in a discharge to a water body must obtain a 401 Certification, which certifies that the project will be in compliance with state water quality standards. The most common federal permits triggering 401 Certification are CWA Section 404 permits issued by USACE. The 401 permit certifications are obtained from the appropriate RWQCB, dependent on the project location, and are required before USACE issues a 404 permit.

In some cases the RWQCB may have specific concerns with discharges associated with a project. As a result, the RWQCB may issue a set of requirements known as WDRs under the State Water Code (Porter Cologne Act) that define activities, such as the inclusion of specific features, effluent limitations, monitoring, and plan submittals that are to be implemented for protecting or benefiting water quality. WDRs can be issued to address both permanent and temporary discharges of a project.

2.11.2 Affected Environment

This section is based on the following documents prepared for the project:

- *Water Quality Assessment Report* (WQAR) (June 2010)
- *Water Quality Assessment Supplemental Memorandum* (January 2015)

2.11.2.1 Surface Water

In the City of Lake Elsinore (City) and the surrounding unincorporated County of Riverside (County) area, drainage is directed from east to west, south to north (south of Railroad Canyon Road to the San Jacinto River and from 1,200 feet (ft) north of the existing Franklin Street overcrossing to Main Street) and north to south (1,200 ft north of the existing Franklin Street overcrossing to the San Jacinto River). A series of south-north channels and underground storm drains transport drainage to the San Jacinto River or the Temescal Creek.

The project area is located within the San Jacinto Valley watershed of the Lake Elsinore-San Jacinto River Basin (Hydrologic Sub-Area (HSA) 802.31) and Temescal Creek (Reach 5 Mid-Section Line of Section 17 (downstream end of freeway cut) to Elsinore G, Hydrologic Sub-Area (HSA) 801.35). The only major drainage facility, the San Jacinto River, crosses Interstate 15 (I-15) north of the Railroad Canyon undercrossing and ultimately drains into Lake Elsinore (Lake Elsinore, Hydrology Unit 802.31). The distance from Lake Elsinore to the project site is approximately 0.5 mile.

The following intermittent beneficial uses were identified in the Santa Ana RWQCB's Basin Plan (*Santa Ana River Basin Water Quality Control Plan*, updated February 2008) for the San Jacinto Valley Watershed Basin:

- REC-1: Body-contact recreation (swimming/wading)
- REC-2: Nonbody-contact recreation (boating/fishing)
- WARM: Warm-water habitat for fish amenable for reproduction in warm water
- WILD: Habitat for wild plants and animals

Beneficial uses identified in Reach 5 of Temescal Creek include the following:

- AGR: Agriculture
- GWR: Groundwater recharge
- RARE: Habitat for rare (threatened/endangered) plants and animals
- REC-1: Body-contact recreation (swimming/wading)
- REC-2: Nonbody-contact recreation (boating/fishing)
- WARM: Warm-water habitat for fish amenable for reproduction in warm water
- WILD: Habitat for wild plants and animals

The San Jacinto Valley Watershed Basin and Reach 5 of Temescal Creek are not listed on the 2006 CWA Section 303(d) List of Water Quality Limited Segments. However, Lake Elsinore is listed on the 303(d) List for Nutrients, Organic Enrichment/Low Dissolved Oxygen, Sediment Toxicity and Unknown Toxicity with the potential sources being “Unknown Non-point Source” or “Urban Runoff/Storm Sewers”. Temescal Creek (Reach 6) is classified as a 303(d) Impaired Water Body listed for Indicator Bacteria. An amendment to the Basin Plan to incorporate Lake Elsinore and Canyon Lake Nutrient Total Maximum Daily Loads (TMDLs) were approved by the Regional Board on December 20, 2004, by the State Water Resources Control Board on May 19, 2005, by the Office of Administrative Law on July 26, 2005 and by the US Environmental Protection Agency on September 30, 2005. The adopted TMDLs specified a set of implementation tasks, responsible parties, and compliance dates. TMDL is a calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources.

2.11.2.2 Groundwater

As designated by the Santa Ana RWQCB, the project area is within the Elsinore Groundwater Basin. The Elsinore Groundwater Basin is bounded on the southwest by the Santa Ana and Elsinore Mountains along the Willard Fault. The basin adjoins the Temecula Valley Groundwater Basin on the southeast at a low surface drainage divide. The basin is bounded on the northwest by the Temescal Subbasin of the Upper Santa Ana River Valley Groundwater Basin at a constriction in the Temescal Wash. The basin is bounded on the northeast by the nonwater-bearing rocks of the Peninsular Ranges along the Glen Ivy Fault. The principal recharge of the basin is from infiltration of stream flow through alluvial fan deposits near the edges of the basin and through gravel deposits along the course of the San Jacinto River. Other contributing sources include infiltration from unlined channels that overlay the basin, underflow from saturated alluvium and fractures within the surrounding bedrock in the mountains and hills, and the spreading of water in recharge basins.

Municipal pumping for potable water is the only major outflow from the Elsinore groundwater basin. Some additional groundwater pumping is performed as necessary to help maintain the elevation of Lake Elsinore at 1,242.4 ft above mean sea level. Based on the *Water Quality Supplemental Memorandum* (January 2015) , the depth to groundwater varies considerably across the basin area, ranging from approximately 50–60 ft in the northern portion of the basin to approximately 400–500 ft in the southern portion. The groundwater gradient naturally follows this variation in depth, flowing from the northwest to the southeast under Lake Elsinore. Two faults, Glen Ivy North and Rome Hill, appear to partially block groundwater flow. The average groundwater gradient is approximately 0.016 in the middle of the basin. Perchlorate has not been detected in the Elsinore Basin.

The beneficial uses identified in the Basin Plan for the Elsinore Groundwater Basin include the following:

- MUN: Municipal
- AGR: Agricultural
- PROC: Process Water Supply

2.11.2.3 Soils/Erosion Potential

Within the project area, the two most common hydrologic soils groups are Group A and Group B. Hydrologic Soil Group is a term that represents a group of soils having similar runoff potential under similar storm and cover conditions. Soil properties that influence runoff potential are those that influence the minimum rate of infiltration for bare soil after prolonged wetting and when not frozen. These properties are depth to a seasonally high water table, saturated hydraulic conductivity after prolonged wetting, and depth to a layer with a very slow water transmission rate.

Group A soils have a low runoff potential. These soils have a high infiltration rate even when thoroughly wetted. They chiefly consist of deep, well-drained to excessively drained sands or gravels and have a high rate of water transmission.

Group B soils have a moderate infiltration rate when thoroughly wetted. They chiefly are moderately well-drained to well-drained soils that have moderately fine to moderately coarse textures and have a moderate rate of water transmission.

2.11.3 Environmental Consequences

2.11.3.1 Temporary Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

Under the No Build Alternative, no improvements to the I-15/Railroad Canyon Road interchange, other than routine roadway and bridge maintenance, would be made. Therefore, the No Build Alternative would result in no short-term water quality impacts from construction-related activities.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

Pollutants of concern during construction include sediments, trash, petroleum products, concrete waste (dry and wet), sanitary waste, and chemicals. Each of these pollutants on its own or in combination with other pollutants can have a detrimental effect on water quality. Chemicals, liquid products, and petroleum products (such as paints, solvents, and fuels), and concrete-related waste may be spilled or leaked, and have the potential to be transported off the project site in storm water runoff into receiving waters.

During project-related construction activities, excavated soil would be exposed, and there would be an increased potential for soil erosion compared to existing conditions. During construction, the total disturbed area from Alternative 2 would be approximately 41.1 acres. Cut and fill mass grading will be required for project construction. In general, preliminary plans (see Typical Cross-Sections and layout sheets in Appendix H) indicate that cut slopes and fill slopes are proposed at 2h:1v or flatter. Adjacent to ramps and freeway in selected Caltrans right-of-way areas where possible, the slopes will be limited to 4h:1v. Limited slope areas below bridge abutments may be at 1.5h:1v.

In general, cut and fill for auxiliary lanes and the Main Street southbound entrance ramp are very minor and less than a few feet. Up to 25 ft of approach fills are proposed at the Railroad Canyon Road undercrossing, cuts up to 21 ft are proposed on the northbound deceleration lane and hook ramps, with minor cuts and fills less than 10 ft are proposed on the remainder of the hook ramps.

Ramp and approach fills for new Franklin Street are up to 30 ft, and cut on the northbound exit ramp to Franklin Street is up to 36 ft. Auto Center Drive extension involves fills up to 30 ft and cuts up to 25 ft. Extension of Canyon Estates Drive and Camino Del Norte involves alternating cuts and fills up to 30 to 35 ft.

Cuts will be made into overburden deposits such as existing fills, young fan deposits, and moderately consolidated older alluvium that can be readily excavated, as well as into granitic / metamorphic rock materials that are more difficult to excavate and may range from rippable to non-rippable. New fills will be placed over these same materials. The following areas are expected to involve substantial cuts in rock materials with the estimated maximum slope heights indicated: Canyon Estates Drive – up to 24 ft; Camino Del Norte – up to 32 ft; northbound Exit Ramp – up to 36 ft; and Auto Center Drive – up to 24 ft.

The project would not affect the erosion potential of the soils in the project area. Several measures will be taken in order to avoid or reduce potential storm water impacts. As described in the Caltrans SWMP, BMPs will be designed and implemented to reduce the discharge of pollutants from the Caltrans storm drain system to the MEP.

Under the General Construction Activity NPDES Permit, the project would be required to prepare an SWPPP and implement Construction BMPs detailed in the SWPPP during construction activities. Construction BMPs would be designed to minimize erosion and prevent spills. In addition, to minimize erosion and sediment deposition within the drainages, construction within the drainages would be limited to outside the rainy season. When Construction BMPs are properly designed, implemented, and maintained to address pollutants of concern and construction as presented in **Measures WQ-1** and **WQ-2** (provided below), no adverse water quality impacts would occur during construction of the project.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

For Alternative 3, pollutants of concern during construction include sediments, trash, petroleum products, concrete waste (dry and wet), sanitary waste, and chemicals. During construction, the total disturbed area from Alternative 3 would be approximately 42.0 acres. Cut and fill impacts associated with Alternative 3 would be the same as those identified for Alternative 2. In addition, chemicals, liquid products, and petroleum products (such as paints, solvents, and fuels), and concrete-related waste may be spilled or leaked, and have the potential to be transported off the project site in storm water runoff into receiving waters.

When Construction BMPs are properly designed, implemented, and maintained to address pollutants of concern and construction as identified in **Measures WQ-1** and **WQ-2** (provided below), no adverse water quality impacts associated with Alternative 3 would occur during construction of the project.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

For Alternative 4, pollutants of concern during construction include sediments, trash, petroleum products, concrete waste (dry and wet), sanitary waste, and chemicals. During construction, the total disturbed area from Alternative 4 would be approximately 41.0 acres. Cut-and-fill impacts associated with Alternative 4 would be the same as those identified for Alternative 2. In addition, chemicals, liquid products, and petroleum products (such as paints, solvents, and fuels), and concrete-related waste may be spilled or leaked, and have the potential to be transported off the project site in storm water runoff into receiving waters.

When Construction BMPs are properly designed, implemented, and maintained to address pollutants of concern and construction as identified in **Measures WQ-1** and **WQ-2** (provided below), no adverse water quality impacts associated with Alternative 4 would occur during construction of the project.

2.11.3.2 Permanent Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

Under the No Build Alternative, there would be no increase in impervious area or change in land use at the interchange. Therefore, the No Build Alternative would not result in an increase in long-term pollutant loading. In addition, roadway runoff would remain untreated, similar to existing conditions.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

Pollutants of concern during operation of a transportation facility include sediments, trash, petroleum products, metals, and chemicals. As identified in Table 2.11.A, the existing surface area within the project area is 36.3 acres. Alternative 2 would create approximately 19.0 acres of new impervious surface, bringing the total amount of impervious surfaces within the project area to 55.3 acres.

Table 2.11.A: Alternative 2 Impervious Surface Area Comparison

Watershed	Jurisdiction	Impervious Surface Area (acres)		
		Existing	Net Increase Proposed	Total Impervious Surface Area
San Jacinto Valley (Lake Elsinore-San Jacinto River Basin, Hydrology Unit 802.31)	State	25.0	15.6	**40.6**
	Local	4.6	2.8	**7.4**
Temescal Creek (Reach 5 Mid-Section Line of Section 17 (Downstream end of freeway cut) to Elsinore G, Hydrology Unit 801.35)	State	6.6	0.4	**7.0**
	Local	0.1	0.2	**0.3**
	Total (acres):	**36.3**	**19.0**	**55.3**

Source: *Water Quality Assessment Report* (June 2010).

The project would alter the land use in the project area, replacing vacant, commercial parking uses, and residential uses with transportation uses that would change the concentrations of pollutants in storm water runoff. For example, bacteria, viruses, nutrients, and pesticides are typically higher in runoff from residential areas that have landscaping on site. Oil and grease and metals, from automobiles and machinery, are typically higher in runoff from commercial and transportation land uses. Therefore, runoff from the project would be expected to contain higher concentrations of metals and oil and grease and lower levels of bacteria, viruses, nutrients, and pesticides compared to existing conditions.

Currently, there are no structural Treatment BMPs in place at the I-15/Railroad Canyon Road interchange. However, some existing highway runoffs infiltrate to vegetated medians and shoulders via sheet flows, which are categorized as Design Pollution Prevention BMPs of the Project Planning and Design Guide or Low Impact Development. As part of the project, BMPs would be implemented to target constituents of concern in runoff from the project area. Potential Treatment BMPs include water quality basins, biofiltration swales, and/or media filters. Potential locations for treatment BMPs are described in more detail in Chapter 1.

The project will include treatment BMPs. The treatment BMPs would target constituents of concerns within the Lake Elsinore watershed, which are phosphorus and nitrogen, as Lake Elsinore has an approved TMDL for Nutrients.

The project would (1) comply with the requirements of Caltrans's Statewide NPDES Permit (Order No. 2012-0011-DWQ, NPDES No. CAS000003), the Riverside County Flood Control and Water Conservation District NPDES Permit (Order No. R8-2010-0033, NPDES No. CAS 618033), and any subsequent permit, (2) consider approved BMPs to treat the runoff from the project prior to discharge into the Temescal Creek, San Jacinto River-Lake Elsinore, and (3) install these BMPs where feasible for Alternative 2.

When BMPs are implemented in accordance with NPDES Permit requirements, as stipulated in **Measures WQ-1** and **WQ-2**, below, operation of the project would not result in adverse impacts to water quality.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

Pollutants of concern during operation of a transportation facility include sediments, trash, petroleum products, metals, and chemicals. As identified in Table 2.11.B, the existing impervious surface area within the project area is 36.3 acres. Alternative 3 would create approximately 20.9 acres of new impervious surface, bringing the total amount of impervious surfaces within the project area to 57.2 acres.

Table 2.11.B: Alternative 3 Impervious Surface Area Comparison

Watershed	Jurisdiction	Impervious Surface Area (acres)		
		Existing	Net Increase Proposed	Total Impervious Surface Area
San Jacinto Valley (Lake Elsinore-San Jacinto River Basin, Hydrology Unit 802.31)	State	25.0	17.5	**42.5**
	Local	4.6	2.8	**7.4**
Temescal Creek (Reach 5 Mid-Section Line of Section 17 (Downstream end of freeway cut) to Elsinore G, Hydrology Unit 801.35)	State	6.6	0.4	**7.0**
	Local	0.1	0.2	**0.3**
Total (acres):		**36.3**	**20.9**	**57.2**

Source: *Water Quality Assessment Report* (June 2010).

The project would alter the land use in the project area, replacing vacant, commercial, and residential uses with transportation uses that would change the concentrations of pollutants in storm water runoff. It is anticipated that this change in land use would result in stormwater runoff in the area containing higher concentrations of metals and oil and grease and lower levels of bacteria, viruses, nutrients, and pesticides compared to existing conditions.

Roadway runoff in the project area is partially treated by infiltration to vegetated medians and shoulders via sheet flows. As part of the project, BMPs would be implemented to target constituents of concern in runoff from the project area. Potential Treatment BMPs for Alternative 3 include water quality basins, biofiltration swales, and/or media filters. Potential locations for treatment BMPs for Alternative 3 are described in more detail in Chapter 1. As identified for Alternative 2, the project under Alternative 3 is required to include treatment BMPs. The BMPs would treat runoff to the MEP, and would target constituents of concern, since Lake Elsinore has an approved TMDL for nutrients.

When BMPs are implemented in accordance with NPDES Permit requirements, as stipulated in **Measures WQ-1** and **WQ-2**, below, operation of the project would not result in adverse impacts to water quality.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

Pollutants of concern during operation of a transportation facility include sediments, trash, petroleum products, metals, and chemicals. As identified in Table 2.11.C, the existing impervious surface area within the project area is 36.3 acres. Alternative 4 would create approximately 18.4 acres of new impervious surface, bringing the total amount of impervious surfaces within the project area to 54.7 acres.

Table 2.11.C: Alternative 4 Impervious Surface Area Comparison

Watershed	Jurisdiction	Impervious Surface Area (acres)		
		Existing	**Net Increase Proposed**	**Total Impervious Surface Area**
San Jacinto Valley (Lake Elsinore-San Jacinto River Basin, Hydrology Unit 802.31)	State	25.0	15.0	**40.0**
	Local	4.6	2.8	**7.4**
Temescal Creek (Reach 5 Mid-Section Line of Section 17 (Downstream end of freeway cut) to Elsinore G, Hydrology Unit 801.35)	State	6.6	0.4	**7.0**
	Local	0.1	0.2	**0.3**
Total (acres):		**36.3**	**18.4**	**54.7**

Source: *Water Quality Assessment Supplemental Memorandum* (January 2015).

The project would alter the land use in the project area, replacing vacant, commercial, and residential uses with transportation uses that would change the concentrations of pollutants in storm water runoff. It is anticipated that this change in land use would result in stormwater runoff in the area containing higher concentrations of metals and oil and grease and lower levels of bacteria, viruses, nutrients, and pesticides compared to existing conditions.

Roadway runoff in the project area is partially treated by infiltration to vegetated medians and shoulders via sheet flows. As part of the project, BMPs would be implemented to target constituents of concern in runoff from the project area. Potential Treatment BMPs for Alternative 4 include water quality basins, biofiltration swales, and/or media filters. Potential locations for treatment BMPs for Alternative 3 are described in more detail in Chapter 1. As identified for Alternative 2, the project under Alternative 4 is required to include treatment BMPs. The BMPs would treat runoff to the MEP, and would target constituents of concern, since Lake Elsinore has an approved TMDL for nutrients.

When BMPs are implemented in accordance with NPDES Permit requirements, as stipulated in **Measures WQ-1** and **WQ-2**, below, operation of the project would not result in adverse impacts to water quality.

CEQA DISCUSSION

Would the project:

IX. a) Violate any water quality standards or waste discharge requirements?

Less Than Significant Impact. During construction, there is the potential for soil erosion and discharge of pollutants into drainages or storm drains. Construction of a new bridge overcrossing may contribute greater concentrations of typical road pollutants. Compliance with the Caltrans' NPDES permits for construction and operation will minimize potential water quality impacts. **Minimization Measures WQ-1** through **WQ-3**, which are standard conditions presented below in Section 2.11.4, would ensure impacts remain below a level of significance.

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

No Impact. The project involves making improvements to roadways and freeway interchanges in the area. Implementation of the project would not require the withdrawal of groundwater; therefore, the project would not result in the direct lowering of the local groundwater table. The project would not interfere with groundwater recharge as the project site is not identified as a groundwater recharge area by the City. For these reasons, the project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level. No impacts associated with this issue would occur, and no mitigation measure is required.

IX. e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

Less Than Significant Impact. As previously identified, the project would result in the conversion of permeable surfaces to impermeable surfaces, which would alter the current drainage pattern. Compliance with the Caltrans' NPDES permit requirements, as noted in **Minimization Measure WQ-2**, presented below in Section 2.11.4, would ensure impacts remain less than significant related to this issue.

IX. f) Otherwise substantially degrade water quality?

Less Than Significant Impact. The project as proposed would not otherwise substantially degrade water quality. Compliance with the requirements of the Stormwater Pollution Prevention Program and the City's erosion control requirements would ensure that significant water quality impacts and violations of standards and requirements would not occur. With compliance with these standard requirements, any water quality impacts would be less than significant. No additional mitigation measures are required.

2.11.4 Avoidance, Minimization, and/or Mitigation Measures

As part of compliance with the NPDES permits, selected Construction Site, Design Pollution Prevention, and Treatment BMPs will be incorporated into the final design of the reconstruction of the I-15/Railroad Canyon Road interchange. The following measures are required to avoid, minimize, and/or mitigate potential project impacts to water quality:

Minimization Measures

WQ-1 The City of Lake Elsinore shall comply with the provisions of the Construction General Permit Order No. 2009-0009-DWQ, NPDES No. CAS000002, and any subsequent permit or individual permit if required by the Santa Ana Regional Water Quality Control Board (RWQCB) as they relate to construction activities for the project including dewatering. This shall include a Notification of Intent (NOI) to the RWQCB at least 30 days prior to the start of construction, preparation and implementation of a Storm Water Pollution Prevention Plan and a Notice of Termination to the Santa Ana RWQCB upon completion of construction and stabilization of the site.

WQ-2 The City of Lake Elsinore shall comply with the provisions of the California Department of Transportation (Caltrans) Statewide National Pollutant Discharge Elimination System (NPDES) Permit Order No. 2012-0011-DWQ, NPDES No. CAS000003. The City shall follow the procedures outlined in the Storm Water Quality Handbooks, Project Planning and Design Guide, for implementing Design Pollution Prevention and Treatment Best Management Practices (BMPs) for the project. This shall include coordination with the Santa Ana RWQCB with respect to feasibility, maintenance, and monitoring of Treatment BMPs as set forth in Caltrans' Statewide Storm Water Management Plan.

WQ-3 The City of Lake Elsinore shall comply with the provisions of the Riverside County Flood Control and Water Conservation District NPDES Permit Order No. R8-2013-0024, NPDES No. CAS 618033, and any subsequent permit or individual permit if required by the RWQCB as they relate to post-construction and operational activities. The City shall prepare a Storm Water Pollution Prevention Plan in compliance with the NPDES Permit requirements.

2.12 Geology/Soils/Seismic/Topography

2.12.1 Regulatory Setting

For geologic and topographic features, the key federal law is the Historic Sites Act of 1935, which establishes a national registry of natural landmarks and protects "outstanding examples of major geological features." Topographic and geologic features are also protected under the California Environmental Quality Act (CEQA).

This section also discusses geology, soils, and seismic concerns as they relate to public safety and project design. Earthquakes are prime considerations in the design and retrofit of structures. Caltrans' Office of Earthquake Engineering is responsible for assessing the seismic hazard for Caltrans projects. Structures are designed using the Caltrans' Seismic Design Criteria (SDC). The SDC provides the minimum seismic requirements for highway bridges designed in California. A bridge's category and classification will determine its seismic performance level and which methods are used for estimating the seismic demands and structural capabilities. For more information, please see the Caltrans' Division of Engineering Services, Office of Earthquake Engineering, Seismic Design Criteria.

2.12.2 Affected Environment

This section is based on the following document prepared for the project:

- *Preliminary Geotechnical Report* (June 2010)

2.12.2.1 Topography

In the project area, elevations vary from approximately 1,400 ft (ft) above mean sea level south of Malaga Road to 1,308 ft between Railroad Canyon Road and San Jacinto River. Elevations on Interstate 15 (I-15) then rise to a maximum of about 1,420 ft, dropping again to about 1,350 ft at Main Street. Steeper rocky hillside areas are generally present on or adjacent to the northbound side of the alignment. These hillsides rise to peaks as high as approximately 1,900 ft. More gradually sloping alluvial fans surround the hillside areas. Canyon drainages dissect the hills and fan deposits. Water level in Lake Elsinore to the west typically has an elevation of 1,260 ft. Due to the hilly topography, and channel and roadway crossings, substantial cuts and fills were made to create the I-15 roadbed and to facilitate the grade separations at Railroad Canyon Road undercrossing, Franklin Street overcrossing, and Main Street undercrossing.

2.12.2.2 Geology

The project area is generally underlain by intrusive Cretaceous granitic rock and Mesozoic metamorphic rock, with overlying deposits of sedimentary materials. The project alignment traverses mostly hillside rock areas and fan deposits at the base of these hillsides. Geologic units along and adjacent to the I-15 corridor generally consist of, in order of increasing age:

- **Very Young Wash Deposits (Qw)** include active channel deposits within San Jacinto River, primarily composed of unconsolidated late Holocene sands and silty sands with gravel, cobble, and boulder sized materials.
- **Very Young Lacustrine Deposits (Ql)** lie within the bottom of Lake Elsinore and consist of unconsolidated late Holocene deposits of primarily clays and silts.
- **Young Alluvial Fan Deposits (Qyf)** are found along the margins of San Jacinto River and Lake Elsinore and are composed of poorly consolidated Holocene to late Pleistocene deposits of sand and silt mixtures with some gravels.

- **Young Alluvial Fan Deposits (Qyf1)** flank the base of rocky hillside areas and consist of poorly to moderately consolidated early Holocene to late Pleistocene deposits of sand and silt mixtures with some gravels.
- **Old Alluvium (Qoa)** is moderately consolidated Pleistocene alluvium, primarily sand silt mixtures and gravels.
- **Cretaceous Granitic Rock (Kgr) and Volcanic Rock (Kv)** includes a variety of Granitic and volcanic materials including hypabyssal Tonalite (Kgh), Gabbro (Kgb), Granodiorite (Kgd), and Estelle Mountain Volcanics (Kvem). Preliminary site observations indicate surface exposures range from decomposed to moderately weathered with relatively unweathered inclusions.
- **Mesozoic Metasedimentary Rock (Mz)** includes quartz-rich metasandstone and Quartzite (Mzq).

Roadway embankment fills have been placed over the native materials, primarily at the bridge abutment approaches and other areas where the freeway crosses canyons or is raised above the natural grade.

No permanent water table or perched groundwater was reported in the project area, with the exception of the San Jacinto River, where permanent groundwater is present near the channel bed elevation. Water was observed in the channel under low flow conditions during the site reconnaissance. Year-round groundwater should be anticipated in the river wash deposits, and levels will vary with flood stage. The remainder of the site is underlain by fan deposits and rock and generally appears to have no permanent groundwater table. Small washes and channels may contain seasonal groundwater, and perched groundwater from man-made sources may be present locally.

2.12.2.3 Soils

No data are available on the embankment materials, but visual examination and the fact that they are compacted fills indicates they are likely medium-dense sand-silt mixtures. Alluvial fan soils underlying the fills generally consist of interbedded medium-dense-to-very-dense silty sands, sandy silts and sands with variable gravel. Other portions of the project site have alluvial materials described as a highly variable mix of loose-to-dense sand, silty sand, silt, gravels, cobbles, and boulders.

2.12.2.4 Faulting and Seismicity

The two principal seismic considerations for most sites in Southern California are the potential for surface rupture along active fault traces and damage to structures due to seismically induced ground shaking. The project alignment is within the Perris block; a relatively stable, rectangular-in-plan area located between the active Elsinore and San Jacinto Fault Zones in the northern Peninsular Ranges Province. These fault zones, a major component of the San Andreas Fault system, consist of a series of northwest-striking right lateral strike-slip faults located in a graben-like structure.[1] The Elsinore Fault Zone and the San Jacinto Fault Zone are strike slip faults capable of generating Magnitude 7.6 and 7.5 earthquakes, respectively.

[1] In geology, a graben is a depressed block of land bordered by parallel faults. A graben is the result of a block of land being downthrown producing a valley with a distinct scarp on each side.

The site is not located in an Alquist-Priolo Fault Zone, and no faults considered capable of surface rupture are mapped as crossing the site or projecting toward the site in the geologic literature reviewed. The Elsinore Glen Ivy Fault is the closest to the site at a distance of about 0.9 to 1.1 miles from the project alignment.

Secondary effects of seismic shaking are non-tectonic processes that are directly related to strong seismic shaking. Ground deformation, including fissures, settlement, displacement, and loss of bearing strength, are common expressions of these processes and are among the leading causes of damage to structures during moderate-to-large earthquakes. Secondary effects leading to ground deformation include liquefaction, settlement, and landsliding. Other hazards indirectly related to seismic shaking are inundation, tsunamis, and seiches.

LIQUEFACTION

Liquefaction is a phenomenon in which loose, saturated soils behave similarly to fluid when subjected to high-intensity ground shaking. Primary factors influencing liquefaction potential include groundwater elevation, soil type and grain size distribution, relative density of soil, initial confining pressure, and intensity and duration of ground shaking. Soils most susceptible to liquefaction are clean, loose, uniformly graded, fine-grained sands and nonplastic silts that are saturated. Silty sands have also been proven susceptible to liquefaction. In addition, soils most susceptible to liquefaction are saturated low-density sands and silts within 50 ft of the ground surface.

Based on information contained in the *Preliminary Geotechnical Report* (June 2010), the project site is underlain by nonliquefiable rock (Kgr, Mz) materials, overlain by a variable depth of liquefaction susceptible loose to medium dense granular alluvial soils (Qyf, Qyf1). However, groundwater does not appear to be present in these liquefaction susceptible deposits.

SEISMICALLY INDUCED SETTLEMENT

Strong ground shaking can cause settlement by allowing sediment particles to become more tightly packed, thereby reducing pore space.

SEISMICALLY INDUCED LANDSLIDES

No existing landslides or landslide-prone formations are known to exist within the project area.

SEISMICALLY INDUCED INUNDATION

Strong seismic ground motion can cause dams and levees to fail, resulting in damage to structures and properties located downstream of those water retention facilities. The planned I-15/Franklin Street interchange is located within an identified dam inundation area. However, it is anticipated that such inundation would be within the confines of the 100-year floodplain.

TSUNAMIS AND SEICHES

A tsunami, or seismically generated sea wave, is generally created by a large, distant earthquake occurring near a deep ocean trough. A seiche is an earthquake-induced wave in a confined body of water such as a lake or reservoir. Damage from tsunamis is typically confined to coastal areas that are 20 ft or less above sea level.

COMPRESSIBLE SOILS

When a load such as fill soils is placed, the underlying soil layers undergo a certain amount of compression due to the deformation and relocation of soil particles and the expulsion of water or air from the void spaces between the grains. Some settlement occurs immediately after a load is applied, and some additional settlement occurs over time after placement of the load. For engineering applications, it is important to estimate the total amount of settlement that will occur following placement of a given load and the rate of compression (consolidation).

EXPANSIVE SOILS

Untreated expansive soils underlying a foundation, slab, or road alignment can cause damage, including heaving, tilting, and cracking. The soils on the project area are predominantly sands, with varying amounts of silt and gravel; therefore, the clay content of soils on the project site is not substantial.

CORROSIVE SOILS

Corrosive soils contain constituents or physical characteristics that react with concrete (water-soluble sulfates) or ferrous metals (chlorides, low percentage of hydrogen levels, and low electrical resistivity). Fine-grained soils (predominantly clays) are the typical soil types responsible for corrosive site conditions.

2.12.3 Environmental Consequences

2.12.3.1 Temporary Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

The No Build Alternative would not result in any soil disturbance; therefore, no temporary impacts related to geology and soils would occur.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

Because the native soils in the project area are anticipated to be predominantly sands and silts with relatively minor amounts of clay, the soils may be affected by moderate-to-severe erosion. These materials would be particularly prone to erosion during construction of Alternative 2, especially during heavy rains. Therefore, construction of Alternative 2 could result in adverse impacts related to erosion. Erosion impacts related to water quality are evaluated in Section 2.11.

Soils in the project area could undergo “immediate” elastic settlement, which usually occurs during brief earthwork activities and shortly after. For new embankments and widening of existing embankments, elastic settlement is anticipated to range from less than 0.25 inch to 1 inch because of the compact-to-dense nature of the subsurface soils. This settlement is within the tolerable range for most conventional structures. Therefore, impacts related to elastic settlement during construction would be minimal, and would not be hazardous to workers during construction.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

Temporary impacts associated with the construction of Alternative 3 would be the same as those identified for Alternative 2. Because the native soils in the project area are anticipated to be predominantly sands and silts with relatively minor amounts of clay, the soils may be affected by moderate-to-severe erosion. Therefore, construction of the Build Alternative could result in adverse impacts related to erosion. Erosion impacts related to water quality are evaluated in Section 2.11. Impacts related to elastic settlement during construction would be minimal.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

Temporary impacts associated with the construction of Alternative 4 would be the same as those identified for Alternative 2. Because the native soils in the project area are anticipated to be predominantly sands and silts with relatively minor amounts of clay, the soils may be affected by moderate-to-severe erosion. Therefore, construction of the Build Alternative could result in adverse impacts related to erosion. Erosion impacts related to water quality are evaluated in Section 2.11. Impacts related to elastic settlement during construction would be minimal.

2.12.3.2 Permanent Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

The No Build Alternative would not involve new structures; therefore, geology and soils conditions in the project area would not change.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

Fault-Induced Ground Rupture

The project site is not located in an Alquist-Priolo Fault Zone, and no faults considered capable of surface rupture are mapped as crossing the site or projecting toward the site in the geologic literature reviewed. The closest distance from the project site to the Elsinore Glen Ivy Fault is about 0.9 mile. Therefore, the potential for ground surface fault rupture in the project area is considered low. As such, no special precautions or restrictions during project operation related to fault-induced ground rupture are required, but the project will be built to current seismic design standards.

Seismic Ground Shaking

Faults in the project area have been documented as producing earthquakes with a magnitude greater than moment magnitude (Mw) of 7.0. Peak ground acceleration (PGA) was estimated following the 2009 Caltrans seismic design procedure. Depending on soil conditions and location within the site, the computed ground motion in the project area could range from about 0.66 to 0.73 g (acceleration of gravity). Therefore, the structures constructed for Alternative 2 are potentially subject to adverse impacts related to seismic ground shaking.

Secondary Effects of Seismic Shaking

The potential secondary effects of seismic shaking on Alternative 2 are discussed below.

Liquefaction

Given the lack of groundwater and/or shallow bedrock, the potential for liquefaction to occur on the project site during a seismic event is low to negligible. The exception is the San Jacinto River wash deposits (Qw), which are permanently saturated loose-to-medium-dense granular soils with high liquefaction potential. However, since no grading or improvements are proposed for this project in the vicinity of San Jacinto River Bridge, liquefaction would not be a design issue for this project. Therefore, the project site would not likely be subject to adverse impacts related to seismically induced liquefaction. However, as detailed in **Measure GEO-1**, the potential for liquefaction effects on the structures constructed for Alternative 2 would be further investigated during final design.

Seismically Induced Settlement

Seismically induced settlement due to liquefaction is anticipated to be small, if not unlikely, in the project area. In addition, because of the compact-to-dense nature of subsurface soils, seismic settlement of dry in-situ soils is expected to be small. Therefore, the project site would not likely be subject to adverse impacts related to seismically induced settlement. However, as detailed in **Measure GEO-1**, the potential for seismically induced settlement effects on the structures constructed for Alternative 2 would be further investigated during final design.

Seismically Induced Landslides

The potential for seismically induced landsliding is considered low, and the project area would not be subject to impacts related to seismically induced landslides. No special precautions or restrictions during project design and operation of Alternative 2 are required.

Seismically Induced Inundation

Railroad Canyon Dam is located outside of the project limits at Canyon Lake a drinking water reservoir. If rainfall causes the lake level to exceed the level spillway elevation, water would flow down the San Jacinto River to Lake Elsinore. Flood gates at the base of the dam would also be opened to reduce flooding impacts and bring the lake down to the level below the spillway. Dam failure of the Railroad Canyon Dam would cause flooding in the project area. Therefore, Alternative 2 could be adversely impacted by seismically induced inundation. However, it is anticipated that such inundation coming from Railroad Canyon Dam would be within the confines of the 100-year floodplain. Impacts related to floodplains and flooding as a result of being within a floodplain are discussed in Section 2.10.

Tsunamis and Seiches

The project site is not near the coast. Although the project site is near Lake Elsinore, it is not anticipated that seiches generated on the lake would reach the project area due to elevation differences (i.e., the project area varies from 160 to 48 ft above the elevation of Lake Elsinore). Therefore, Alternative 2 is not at risk of inundation from a tsunami or seiche. No special precautions or restrictions during project design and operation of the Build Alternative are required.

Slope Stability

Stability of Natural Slopes

No areas of major concern for rockfalls were observed in preliminary site reconnaissance. With the currently proposed slope gradients, potential for rockfalls is considered low for properly constructed rock cuts. Therefore, Alternative 2 would not be adversely impacted by instability associated with natural slopes. No special precautions or restrictions during project design and operation of Alternative 2 are required.

Stability of Proposed Slopes

The final design of the Build Alternative may include the construction of manufactured slopes. The final design would incorporate appropriate design features to address slope stability constraints in manufactured slopes, as necessary. Because Alternative 2 would include manufactured slopes, the structures constructed for that alternative are considered to be subject to potential adverse impacts related to the stability of those slopes. As detailed in **Measure GEO-1**, slope stability would be further investigated during final design.

Subgrade Stability

Compressible Soils

The subsurface soils on the project area are predominantly granular; therefore, the soils are not expected to undergo consolidation settlement (settlement over long periods of time). Alternative 2 would not be adversely affected by compressible soils. However, as detailed in

Measure GEO-1, the potential for soil-compression-related impacts would be further investigated during final design.

Expansive Soils

On-site soils are anticipated to be non-expansive or have a very low expansion potential. However, there may be localized, discontinuous layers of clayey soils with higher expansion potential within the project area. Therefore, Alternative 2 may result in adverse impacts associated with expansive soils. As detailed in **Measure GEO-1**, the potential for soil expansion would be further investigated during final design.

Corrosive Soils

The native subsurface soils in the project area are composed predominantly of coarse-grained soils (sand and silty sand) with little clay binder; therefore, corrosive soil is not expected. The construction of Alternative 2 would not be adversely affected by corrosive soils. However, as detailed in **Measure GEO-1**, the potential for soil corrosion effects on the project structures would be further investigated during final design.

Erosion

Since the native soils in the project area are anticipated to be predominantly sands and silts with relatively minor amounts of clay, there is the potential for moderate to severe erosion on the slopes. These slopes and materials would be particularly prone to erosion from runoff from the new pavement areas, especially during heavy rains. Therefore, operation of Alternative 2 could result in adverse water quality impacts related to erosion. Erosion impacts associated with this alternative are evaluated in Section 2.11.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

Alternative 3 would have the same type of geologic site characteristics as those identified for Alternative 2. Therefore, permanent impacts that would occur with implementation of Alternative 3 would be the same as those identified for Alternative 2.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

Alternative 4 would have the same type of geologic site characteristics as those identified for Alternative 2. Therefore, permanent impacts that would occur with implementation of Alternative 4 would be the same as those identified for Alternative 2.

CEQA DISCUSSION

Would the project:

VI. a) Expose 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.)

   <u>No Impact.</u> While the project site is located in a seismically active region, the project site is not located within a known "Earthquake Fault Zone" as defined by the Alquist-Priolo Earthquake Fault Zoning Map Act. In addition, no faults considered capable of surface rupture are mapped as crossing the site or projecting toward the site in the geologic literature reviewed. The Elsinore Glen Ivy Fault is the closest to the site at a distance of about 1.4 kilometers (0.87 mile) from the project alignment. The project would not result in the construction of habitable structures; therefore, no potential for the loss, injury, or death resulting from fault rupture would occur. No mitigation is required.

ii) Strong seismic ground shaking?

Less Than Significant Impact. Like all of southern California, the project site is located in a seismically active area and, therefore, will continue to be subject to ground shaking resulting from activity on local and regional faults. The project site is located within Seismic Zone 4, which includes those areas of California that have experienced major historic earthquakes (Richter magnitude greater than seven) and high levels of recent seismicity. While the project site may be subject to strong ground shaking on site, the project does not include the construction of structures designed for human occupancy.

However, faults in the project area have been documented as producing earthquakes with a magnitude greater than moment magnitude (Mw) of 7.0. Peak Ground Acceleration (PGA) was estimated following the 2009 Caltrans seismic design procedure. Depending on soil conditions and location within the site, the computed ground motion in the project area could range from about 0.66 to 0.73 g. Therefore, the structures constructed for the project are potentially subject to potentially significant impacts related to seismic ground shaking. Adherence to **Minimization Measures GEO-1** and **GEO-2**, presented below in Section 2.12.4, would reduce impacts associated with this issue to a less than significant level.

iii) Seismic-related ground failure, including liquefaction?

Less Than Significant Impact. Liquefaction occurs when loose, unconsolidated, water-laden soils are subjected to shaking as a result of an earthquake, causing the soils to lose cohesion. The possibility of liquefaction occurring at a project site is dependent upon the occurrence of a significant earthquake in the vicinity, sufficient groundwater to cause high pore pressures, and on the grain size, plasticity, relative density, and confining pressures of the soil at the project site. Based on information contained in the *Preliminary Geotechnical Report* (June 2010),[1] given the lack of groundwater and/or shallow bedrock, the potential for liquefaction to occur on the project site during a seismic event is low to negligible. The exception is the San Jacinto River wash deposits (Qw), which are permanently saturated loose-to-medium-dense granular soils with high liquefaction potential. However, since no significant grading or improvements are proposed for this project in the vicinity of San Jacinto River Bridge, liquefaction would not be a design issue for this project. Adherence to **Minimization Measures GEO-1** and **GEO-2**, which are standard conditions, presented below in Section 2.12.4, would minimize impacts associated with this issue and ensure impacts remain less than significant.

iv) Landslides?

No Impact. The project site is not within an area of identified steep slopes or susceptible to landslide hazards nor is it located near lands identified as having a landslide

[1] Group Delta Consultants, Inc. 2010. *Preliminary Geotechnical Report I-15/Railroad Canyon Road and I-15/Franklin Street Interchange Improvements*, Lake Elsinore, California. June.

susceptibility; therefore, landslides are not a geotechnical constraint for the site.[1] The potential for seismically induced landsliding is considered low and the project area would not be subject to impacts related to seismically induced landslides. No special precautions or restrictions during project design and operation of the project would be required. As the project would not result in a landslide hazard, no impact related to this issue would occur. No mitigation is required.

VI. b) Result in substantial soil erosion or the loss of topsoil?

Less Than Significant Impact. Because the native soils in the project area are anticipated to be predominantly sands and silts with relatively minor amounts of clay, the soils may be affected by moderate-to-severe erosion. These materials would be particularly prone to erosion during construction of the project, especially during heavy rains. Therefore, construction of the project could result in adverse impacts related to erosion. Adherence to **Minimization Measures GEO-1** and **GEO-2**, which are standard conditions, presented below in Section 2.12.4, would minimize impacts associated with this issue and ensure impacts remain less than significant.

VI. c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

Less Than Significant Impact. Subsidence is the sudden sinking or gradual downward settling of the earth's surface with little or no horizontal motion. Subsidence is caused by a variety of activities, which includes (but is not limited to) withdrawal of groundwater, pumping of oil and gas from underground, the collapse of underground mines, liquefaction, and hydro-compaction. The project does not include the withdrawal of groundwater or other resources from underground sources. The subsurface soils on the project area are predominantly granular; therefore, the soils are not expected to undergo consolidation settlement (settlement over long periods of time). It is anticipated that the project would not be significantly affected by compressible soils. However, adherence to **Minimization Measures GEO-1** and **GEO-2**, which are standard conditions, presented below in Section 2.12.4, would ensure that impacts associated with this issue remain less than significant.

VI. d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

Less Than Significant Impact. Expansive soils generally have a significant amount of clay particles, which can give up water (shrink) or take on water (swell). The change in volume exerts stress on buildings and other loads placed on these soils. The extent of shrink/swell is influenced by the amount and kind of clay in the soil. The occurrence of these soils is often associated with geologic units having marginal stability. The distribution of expansive soils can be widely dispersed, and they can occur in hillside areas as well as low-lying alluvial basins. The soils on the project area are predominantly sands, with varying amounts of silt and gravel; therefore, the clay content of soils on the project site is not substantial. On-site soils are anticipated to be non-expansive or have a very low expansion potential. However, there may be localized, discontinuous layers of clayey soils with higher expansion potential within the project area. Adherence to **Minimization Measures GEO-1** and **GEO-2**, which are standard conditions, presented below in Section 2.12.4, would ensure that impacts associated with this issue remain less than significant.

VI. e) Would the project have soils capable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

No Impact. The project is an infrastructure improvement project and does not require a septic tank or sewer system. Therefore, no impacts related to this issue will occur. No mitigation is required.

2.12.4 Avoidance, Minimization, and/or Mitigation Measures

The measures below would minimize the potential impacts of geotechnical and soils conditions on structures constructed under the Build Alternatives 2, 3, and 4 of the project:

Minimization Measures

GEO-1 During the final design, a detailed geotechnical investigation shall be conducted by a qualified geotechnical/geologic engineer to prepare the Final Geotechnical Report. The geotechnical report will build on the information in the Preliminary Geotechnical Report, focusing the analysis on potential geotechnical constraints to the selected build alternative and the specific design features included in the final engineering to address those constraints. The Preliminary Geotechnical Report identified potential soil-related constraints and hazards, such as manufactured slope instability, settlement, liquefaction, or secondary effects of seismic shaking. The detailed analysis in the Final Geotechnical Report will address those constraints along the entire alignment of the selected alternative with appropriate design features addressing those constraints included in the final project design. The project-specific findings and recommendations of the geotechnical investigation shall be summarized in a Final Geotechnical Report to be submitted to the City of Lake Elsinore for review and approval. Those findings and recommendations shall be incorporated in the final design of the Build Alternative.

The report will specifically include:

- Evaluation of expansive soils, compressible soils, and corrosive soils along the selected alignment and recommendations regarding construction procedures and/or incorporation of design criteria in the final design to minimize the effect of these soils on the project.
- Identification of potential liquefiable areas within the project limits and recommendations and/or design criteria to minimize the effect of liquefaction on the project.
- Demonstration that manufactured slopes can be designed to address slope stability.

GEO-2 All of the following requirements will be included in the final design for the project:

- Structures shall be designed to resist the maximum credible earthquake associated with nearby faults.
- Design and construction of the project in accordance with California Department of Transportation guidelines, current regulations, and the California Building Code.

2.13 Paleontology

2.13.1 Regulatory Setting

Paleontology is a natural science focused on the study of ancient animal and plant life as it is preserved in the geologic record as fossils. A number of federal statutes specifically address paleontological resources, their treatment, and funding for mitigation as a part of federally authorized or funded projects. 16 United States Code (USC) 461-467 (the National Registry of Natural Landmarks) establishes the National Natural Landmarks (NNL) program. Under this program, property owners agree to protect biological and geological resources such as paleontological features. Federal agencies and their agents must consider the existence and location of designated NNLs, and of areas found to meet the criteria for national significance, in assessing the effects of their activities on the environment under National Environmental Policy Act (NEPA). 16 USC 470(a) (the Paleontological Resources Preservation Act) prohibits the excavation, removal, or damage of any paleontological resources located on federal land under the jurisdiction of the Secretaries of the Interior or Agriculture without first obtaining an appropriate permit. The statute establishes criminal and civil penalties for fossil theft and vandalism on federal lands. 23 USC 1.9(a) requires that the use of federal-aid funds must be in conformity with federal and state law. 23 USC 305 authorizes the appropriation and use of federal highway funds for paleontological salvage as necessary by the highway department of any state, in compliance with 16 USC 431-433 above any state law.

Under California law, paleontological resources are protected by the California Environmental Quality Act (CEQA).

2.13.2 Affected Environment

This section is based on the following documents prepared for the project:

- *Paleontological Identification Report* and *Paleontological Evaluation Report* (PIR/PER) (April 2010)
- *Paleontological Resources Addendum Memorandum* (Paleontological Addendum Memorandum) (January 2015)

In the summer of 2014, the Project Development Team (PDT) and the City of Lake Elsinore introduced Alternative 4. The Paleontological Addendum Memorandum was prepared to address Alternative 4 and to determine whether the recommendations contained in the PIR/PER prepared in 2010, which address Alternatives 2 and 3, are sufficient to address Alternative 4.

The following is a discussion of the research conducted in support of the PIR/PER (April 2010). A paleontological literature review was conducted using unpublished reports, paleontological assessment and monitoring reports, field notes, and published literature to identify fossil localities within the project area and the surrounding area. A paleontological resource records search was conducted through the Geological Sciences Division of the San Bernardino County Museum and through the Natural History Museum of Los Angeles County. A vehicular survey of the project was conducted in November 2009. The survey verified the results of the literature review and the analysis of the geologic mapping along the rights-of-way. The vehicular survey also verified lithologic descriptions and provided field observations of specific lithologies that support the potential for preservation of fossils in specific formations. In addition, a foot survey with intuitive deviations was conducted in association with the vehicular survey in November 2009, by walking along shoulders of unpaved streets and roadways, and unoccupied parcels in the project study area.

The original PIR/PER (2010) included a "Research Area" that extended 1,000 feet (ft) outside the project Area of Potential Disturbance (APD). Because the new APD is within the original "Research Area," no new sediment types were found in the new APD for the project. The paleontological sensitivities that were assigned to the geologic units are still valid, and do not need to be changed. As such, the findings and mitigation measures discussed in the original report are sufficient to mitigate the newly added APD contained within Alternative 4, and no additional studies are required.

The project is located in the northwestern Peninsular Range Province of southern California. This province is bounded on the north by the Transverse Ranges, on the east by the Colorado Desert, and on the west by the Pacific Ocean. The province extends south and includes the entire Baja California Peninsula.

The project area is within the northern portion of the Elsinore Trough. The Elsinore Trough is a structural feature created by shearing along branches of the Elsinore Fault Zone. The Elsinore Fault is located along the west margin of the Perris Block, separating the latter from the Santa Ana Mountains of the Peninsular Range Physiographic Province to the south.

Geologic mapping indicates that the project area is located on deposits of late Holocene Alluvium and Holocene to late Pleistocene Alluvium (Qa and Qya) primarily derived from the west-flowing Santa Ana River. As illustrated in Figure 2.13.1, based on the soils within the project site, there is a high paleontological sensitivity in portions of the project area. The geotechnical report indicates that excavation for the project will encounter Holocene to late Pleistocene deposits of sand and silt mixtures with some gravels (Qyf, Qyf1) and Old Pleistocene Alluvium (Qo), which is primarily sand and silt mixed with gravel stringers. These fossiliferous sediments crop out at the surface and may also be encountered below the surface under most of the project.

Compact Pleistocene silty sands and sandy silts are visible on the surface of the project area. Boring logs suggest that the fine-grained character of these sediments is suitable for preservation of fossils. Their brown-to-red-brown color supports Pleistocene age. The presence of gray-green micaceous silts with organic material at an elevation of 1,250 ft above mean sea level (amsl) may represent a Pleistocene high-stand of Lake Elsinore slightly above its current elevation of 1,240 ft amsl.

Preliminary engineering data regarding depth of excavation suggest that excavation may reach depths of 22 ft in certain areas. Based on the PIR/PER study, there is potential for near-surface paleontological resources to occur at depths below 5 ft of the ground surface. This depth of occurrence of Pleistocene fossils is consistent with that elsewhere in the Elsinore Trough of the Peninsular Range Province near Temecula, Murrieta, Elsinore, and Corona. Table 2.13.A provides the depths that excavation will reach at various project-related structures.

Areas designated to receive fill will require site preparation work including removal and recompaction of native materials. Some structures are likely to require support on deep foundations (e.g., piles) that will penetrate through fill into native soils. Foundations and walls may be excavated into native sediments or in engineered (compacted) fill.

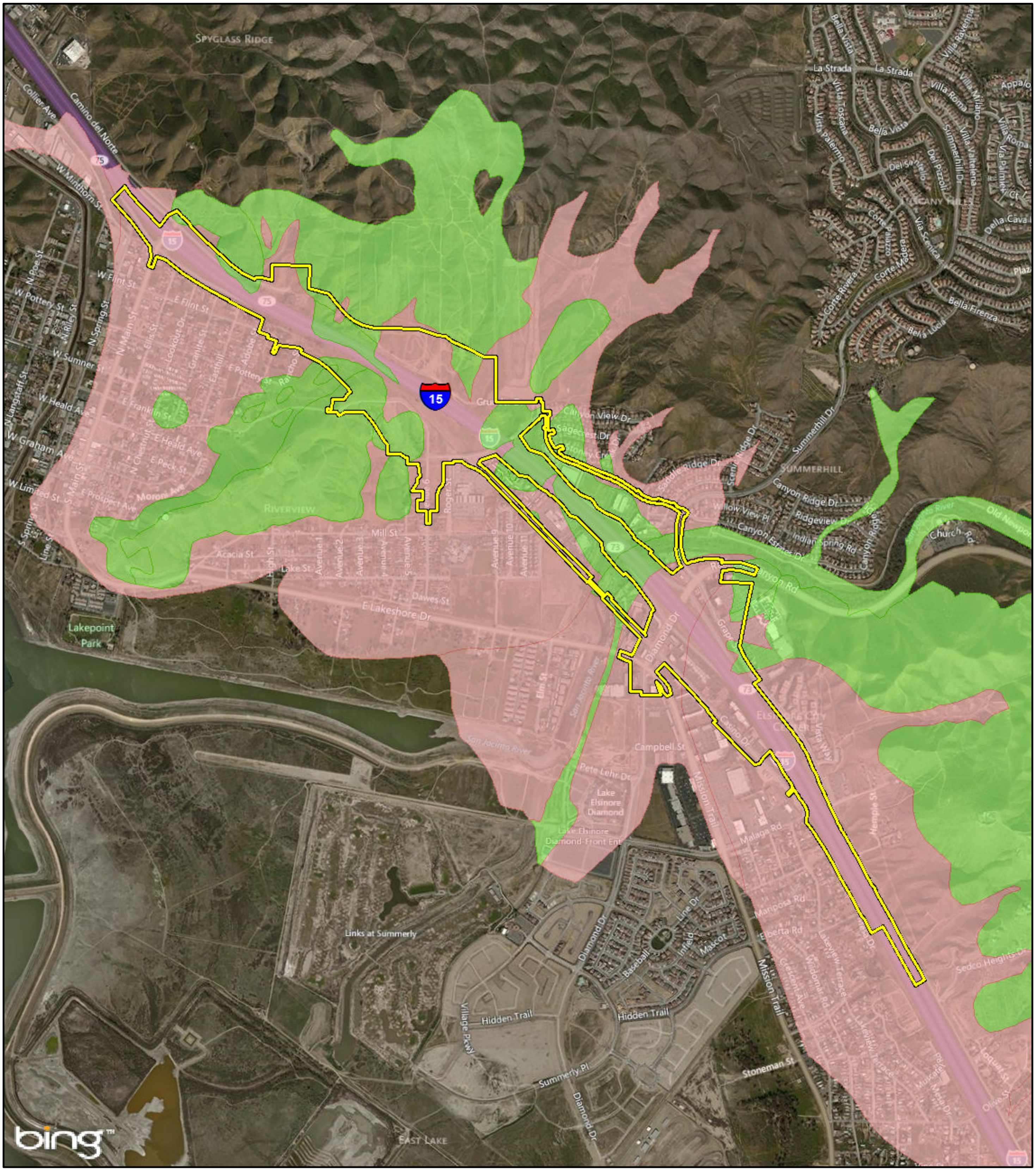


FIGURE 2.13.1

Paleontological Identification Report/Paleontological Evaluation Report Study Area (2014)

Paleontological Sensitivity

High Sensitivity

Low Sensitivity

N

0 1000 2000
FEET

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Paleontological Sensitivity

SOURCE: Bing Maps (2010); Preliminary Geologic Map of the Elsinore 7.5' Quadrangle (2003)

I:\SAE1401\Reports\IS_EA\fig2-13-1_PaleoSensitivity.mxd (10/9/2015)

This page intentionally left blank

Table 2.13.A: Maximum Depth of Excavation (ft)

Location	Maximum Depth of Excavation	Maximum Height of Embankment	Comments
Freeway Auxiliary Lane Widening	3	2	
Railroad Canyon Road	3	3	
New Franklin Street	5	30	
Auto Center Drive	22	32	
Canyon Estate Drive-Camino Del Norte	17	27	
Railroad Canyon Road Undercrossing	3	26	New embankment pipe depth ± 60 ft
Franklin Street Overcrossing (New Bridge)	3	27	New embankment pipe depth ± 60 ft
Grape Street Northbound Off-Ramp	3	15	
Grape Street Northbound On-Ramp	3	18	
Casino Drive Southbound Off-Ramp	13	1	
Casino Drive Southbound On-Ramp	11	1	
Franklin Street Southbound Off-Ramp	3	24	
Franklin Street Southbound On-Ramp	3	25	
Franklin Street Northbound Off-Ramp	3	28	
Franklin Street Northbound On-Ramp	3	14	
Main Street Southbound On-Ramp	3	2	
Retaining Walls: Franklin Street	4	23	
Retaining Walls: Casino Drive Southbound On-Ramp	4	8	
Retaining Walls: Railroad Canyon Road	4	12	
Drainage Culverts	8	27	
Soundwall Depth (if applicable)	16		

Source: SC Engineering (2014).
ft = foot/feet

2.13.3 Environmental Consequences

2.13.3.1 Temporary Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

The No Build Alternative does not include any changes to the physical environment; therefore, no temporary impacts to paleontological resources would occur.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

Alternative 2 would require ground disturbance and modification to existing freeway and local street structures. These construction activities could result in impacts to paleontological resources. The potential impacts to paleontological resources would be permanent impacts and are addressed below. Any analysis of temporary impacts is not applicable.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

Alternative 3 would require ground disturbance and modification to existing freeway and local street structures. These construction activities could result in impacts to paleontological resources. The potential impacts to paleontological resources would be permanent impacts and are addressed below. Any analysis of temporary impacts is not applicable.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

Alternative 4 would require ground disturbance and modification to existing freeway and local street structures. These construction activities could result in impacts to paleontological resources. The potential impacts to paleontological resources would be permanent impacts and are addressed below. Any analysis of temporary impacts is not applicable.

2.13.3.2 Permanent Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

The No Build Alternative would not include any excavation in the project area. Therefore, the No Build Alternative would not result in adverse impacts related to paleontological resources.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

Portions of the project are located in areas identified with high paleontological sensitivity at surface and at depth, as well as areas of low paleontological sensitivity. Grading and excavation will occur with implementation of Alternative 2. Previously referenced Table 2.13.A provides the maximum depth of excavations in areas of paleontological sensitivity where proposed overcrossings, walls, culverts, and ramps are located.

The I-15/Railroad Canyon Road Interchange Improvement project is anticipated to disturb sediments with high potential to contain significant, nonrenewable paleontological resources. The project is located in areas identified as high paleontological sensitivity at the surface and at depth. Two fossil localities are known from within 2 miles of the project, and one is as close as 0.5 mile to the project. Both localities are located within the same sediments that underlie the project improvements. Based on the positive results of this PIR/PER study, impact minimization measures are proposed below that will provide the same level for protection as a California Department of Transportation (Caltrans) Paleontological Mitigation Program (PMP). These paleontological resource impact minimization measures, as specified below in **Measure PAL-1** shall be incorporated into the plans, specifications, and estimates for the project.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

As identified in Figure 2.13.1, portions of the project are located in areas identified with high paleontological sensitivity at surface and at depth, as well as areas of low paleontological sensitivity. Grading and excavation will occur with implementation of Alternative 3 in an area with high potential to contain significant, nonrenewable paleontological resources. Previously referenced Table 2.13.A provides the maximum depth of excavations in areas of paleontological sensitivity where proposed overcrossings, walls, culverts, and ramps are located. Two fossil localities are known from within 2 miles of the project, and one is as close as 0.5 mile to the project. Both localities are located within the same sediments that underlie the project improvements. Based on the positive results of this PIR/PER study, impact minimization measures are proposed below that will provide the same level for protection as a Caltrans PMP. These paleontological resource impact minimization measures, as specified below in **Measure PAL-1** shall be incorporated into the plans, specifications, and estimates for the project.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

As shown in Figure 2.13.1, portions of the project are located in areas identified with high paleontological sensitivity at surface and at depth, as well as areas of low paleontological sensitivity. Grading and excavation will occur with implementation of the Build Alternative in an area with high potential to contain significant, nonrenewable paleontological resources. Previously referenced Table 2.13.A provides the maximum depth of excavations in areas of paleontological sensitivity where proposed overcrossings, walls, culverts, and ramps are located. Two fossil localities are known from within 2 miles of the project, and one is as close as 0.5 mile to the project. Both localities are located within the same sediments that underlie the project improvements. Based on the positive results of this PIR/PER study, impact minimization measures are proposed below that will provide the same level for protection as a Caltrans PMP. These paleontological resource impact minimization measures, as specified below in **Measure PAL-1** shall be incorporated into the plans, specifications, and estimates for the project.

CEQA DISCUSSION

Would the project:

V. c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Less Than Significant with Mitigation. Portions of the project are located in areas identified with high paleontological sensitivity at surface and at depth, as well as areas of low paleontological sensitivity. Grading and excavation will occur with implementation of the project. The project is anticipated to disturb sediments with a high potential to contain significant, nonrenewable paleontological resources. Two fossil localities are known from within 2 miles of the project; one within a 0.5 mile of the project. Both are in the same sediments that occur on the project site. Based on the positive results of the *Paleontological Investigation Report/Paleontological Evaluation Report* (PIR/PER) (2010)[1] and the *Paleontological Resources Addendum Memorandum* (2015),[2] mitigation measures are proposed that will provide the same level for protection as a Caltrans Paleontological Mitigation Program (PMP). These paleontological resource impact minimization measures, as specified below in **Mitigation Measure PAL-1**, presented below in Section 2.13.4, shall be incorporated into the plans, specifications, and estimates for the project. Potential impacts would be reduced to a less than significant level.

2.13.4 Avoidance, Minimization, and/or Mitigation Measures

The following measure is required to avoid, minimize, and/or mitigate potential project impacts to paleontological resources:

Mitigation Measure

PAL-1 Prior to the beginning of construction activities, the City of Lake Elsinore (City), in accordance with the guidelines on the California Department of Transportation (Caltrans) Standard Environmental Reference website, the County of Riverside guidelines, and the guidelines of the Society of Vertebrate Paleontology, shall develop a Paleontological Mitigation Plan (PMP) for implementation during the

[1] LSA Associates, Inc. 2010. *Paleontological Resources Identification and Evaluation Report Interstate 15 and Railroad Canyon Road Interchange Improvement Project*. April.
[2] LSA Associates, Inc. 2015. *Paleontological Resources Addendum Memorandum*. January.

excavation phase of the project. The PMP shall be prepared and shall include, but not be limited to, the following:

(1) A pre-construction field survey shall be conducted, followed by salvage of surface paleontological resources, if necessary.

(2) All grading and excavation in sediments with the potential to contain paleontological resources shall be monitored by trained paleontological crews working under the direction of a qualified professional. Monitors shall be empowered to temporarily halt or divert equipment to allow the removal of abundant or large specimens. Paleontological monitors shall be equipped to salvage fossils as they are unearthed to avoid construction delays.

(3) The fossils shall be stabilized, salvaged, and removed to safe off-site storage.

(4) The fossils shall undergo preparation, identification, and analysis to allow their identification.

(5) The fossils shall be curated into the systematic storage system of an established institutional repository.

(6) A Paleontological Mitigation Report signifying completion of the PMP shall be prepared and submitted to Caltrans.

2.14 Hazardous Waste and Materials

2.14.1 Regulatory Setting

Hazardous materials, including hazardous substances and wastes are regulated by many state and federal laws. Statutes govern the generation, treatment, storage and disposal of hazardous materials, substances, and waste, and also the investigation and mitigation of waste releases, air and water quality, human health and land use.

The primary federal laws regulating hazardous wastes/materials are the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) and the Resource Conservation and Recovery Act of 1976 (RCRA). The purpose of CERCLA, often referred to as "Superfund," is to identify and clean up abandoned contaminated sites so that public health and welfare are not compromised. The RCRA provides for "cradle to grave" regulation of hazardous wastes. Other federal laws include:

- Community Environmental Response Facilitation Act (CERFA) of 1992
- Clean Water Act
- Clean Air Act
- Safe Drinking Water Act
- Occupational Safety and Health Act (OSHA)
- Atomic Energy Act
- Toxic Substances Control Act (TSCA)
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

In addition to the acts listed above, Executive Order (EO) 12088, *Federal Compliance with Pollution Control Standards*, mandates that necessary actions be taken to prevent and control environmental pollution when federal activities or federal facilities are involved.

California regulates hazardous materials, waste, and substances under the authority of the California Health and Safety Code and is also authorized by the federal government to implement RCRA in the state. California law also addresses specific handling, storage, transportation, disposal, treatment, reduction, cleanup and emergency planning of hazardous waste. The Porter-Cologne Water Quality Control Act also restricts disposal of wastes and requires cleanup of wastes that are below hazardous waste concentrations but could impact ground and surface water quality. California regulations that address waste management and prevention and clean up contamination include Title 22 Division 4.5 Environmental Health Standards for the Management of Hazardous Waste, Title 23 Waters, and Title 27 Environmental Protection.

Worker health and safety and public safety are key issues when dealing with hazardous materials that may affect human health and the environment. Proper management and disposal of hazardous material is vital if it is found, disturbed, or generated during project construction.

2.14.2 Affected Environment

This section is based on the following document prepared for the project:

- *Updated Initial Site Assessment* (ISA) (November 2016)

A previous version of this ISA was prepared and approved by the Department of Transportation (Caltrans) in November 2010. In response to the new ASTM E1527-13 standard, which went into effect on December 30, 2013, the ISA was updated and approved in July 2015. Due to an outdated records search, an additional update to the ISA approved in July 2015 was conducted. While there were no substantial changes to the site or regulatory data, there were minor changes to incidental dumping in the vicinity of the project limits. The following were conducted as part of this most recent, November 2016 ISA:

- **Environmental Database Review:** A records search of government environmental databases was conducted using the Radius Map Report prepared by EDR (Environmental Data Resources, October 11, 2016). This report meets the government records search requirements of American Society for Testing and Materials (ASTM) E1527-13 *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* and the *California Department of Transportation Project Development Procedures Manual*, Guidelines for ISA (Caltrans, 1999) for the project area and properties up to approximately 0.25 mile from the project area. However, the search of the National Priority List (NPL) was for a 1-mile radius.
- **Agency Records Review:** The Riverside County Health Services Agency, Environmental Health Department, and The Regional Water Quality Control Board (RWQCB) were contacted with regard to obtaining and reviewing documents for properties located within and adjacent to the project area. Data contained on their websites were reviewed for any relevant information.
- **Historic Research:** Aerial photographs, topographic maps, oil well maps, and parcel maps were reviewed.
- **Site Reconnaissance:** On October 13, 2016, a reconnaissance-level survey of the subject site was conducted, consisting of observation and documentation of existing site conditions and nature of the neighboring property development within 0.25 mile of the subject site from public right-of-ways and public access points.

The following hazards are potentially of concern for the project area:

- **Aerially Deposited Lead (ADL).** Lead is generally encountered in unpaved areas (or formerly unpaved areas) adjoining older roads primarily as a result of deposition from historical vehicle emissions. The project area is and has been historically part of State Route 71 (since before 1967) and Interstate 15 (I-15) (after 1980). Therefore, the potential for historical soil impacts from ADL exists. However, a recent ADL study has been completed for the I-15 Corridor Improvement Project (CIP) from the San Bernardino-Riverside County Line to near Murrieta which included the segment of the Railroad Canyon interchange.
- **Lead-Based Paint (LBP).** It is possible for elevated lead concentrations to be present within the striping paint within the existing eastbound on- and off-ramps at Railroad Canyon Road. In addition, it is possible for LBP to be present in buildings constructed before 1979 within the project area, including a residence and nine bridges.
- **Asbestos-Containing Materials (ACM).** An asbestos survey was not performed as part of the ISA. One permanent residential structure is present on the subject site, located at 609 Flint Street and considered to be a full acquisition. There is a potential for this structure to contain ACM.

The following hazards are of potential concern for the Franklin Street interchange area:

- **Soil Impacts.** The residence at 609 Flint Street that would be required for a full parcel acquisition may contain LBP and ACM. Additionally, soil impacts from lead may be present surrounding the structures, organochlorine pesticides (OCPs) due to and termite pesticides applied near the foundation of the house, and petroleum and metals deposits from inoperable vehicles were present on this property. Soil impacts may be present on a property required for a partial acquisition at 606 Minthorn Street due to vehicles stored north of the residence.
- **Cell Towers.** The partial parcel acquisition east of the residential property required for full acquisition at 609 Flint Street is currently the site of a cell tower operated by American Tower Corporation and has the site name of EMWD Rancho Dr. Chemical use at this facility is unknown.
- **Polychlorinated Biphenyls (PCBs) and Mercury.** PCBs may be present in the pole-mounted transformers located along and within the State right-of-way or on partial acquisition parcels and adjacent properties. There are also several pad-mounted transformers on the two commercial properties being acquired (Sizzler and Pizza Hut). However, based on historical records review, both of these structures appear to be of fairly recent construction (built after 1980), and therefore, PCBs are not anticipated.
- **Debris.** Scattered debris including domestic trash and waste tires are scattered across the vacant land north of I-15 between Main Street and Franklin Street. This condition represents a low risk to the project area; however, waste tires encountered within the partial acquisition areas should be disposed of properly.
- **Drug Waste Response.** A drug lab waste response was performed at the intersection of Main Street and Camino Del Norte and Avenue 6 and Franklin Street within the project area. The waste was cleaned up, and both incidents represent an Historical Recognized Environmental Condition (HREC) with low risk to the project area.
- **Landfills.** The Elsinore Sanitary Landfill is located at the north end of Franklin Street up-gradient of the project area. This landfill is monitored and managed by the Riverside County Waste Management Department, and no enforcement actions are recorded for this facility. The facility is a CREC and poses a low risk to the project area as groundwater is not expected to be encountered during the project construction activities.
- **Gas Stations.** The 76 Station located at 515 N. Main Street is down-gradient of the project area. The case is closed, and represents a HREC with a low risk to the project area.

The following hazards are of potential concern for Alternative 2:

- There are no additional signs of recognized environmental condition (RECs) associated with Alternative 2 aside from those discussed for the Franklin Street interchange.

The following hazards are of potential concern for Alternative 3:

- In addition to the hazards of potential concern discussed for the Franklin Street interchange, the vacant restaurant building (Sizzler) located at 31712 Casino Drive and Pizza Hut located at 31736 Casino Drive may contain LBP and ACM.

The following hazards are of potential concern for Alternative 4:

- Leaking Underground Storage Tanks (LUSTs) were noted to exist within the project area (a gas station along Grape Street, a gas station along Diamond Drive, and a gas station along Mission Trail). These three LUSTs have impacted soils and groundwater. The potential soil impacts from these LUSTs appear to be contained on site, and are not anticipated to affect the proposed partial acquisition areas. The monitoring wells associated with these LUSTs should be protected or abandoned if impacted by construction activities. Eileen's Dry Cleaners located in the shopping center at 351 Railroad Canyon Road is required for a partial parcel acquisition and temporary construction easements (TCEs). The drycleaner has used halogenated solvents in the past, but no reported releases or violations exist. Dumped domestic trash, tires, and wood pieces have been observed on vacant land proposed for easements and TCEs.

2.14.3 Environmental Consequences

2.14.3.1 Temporary Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

The No Build Alternative would not involve ground or structure disturbance; therefore, no temporary impacts related to hazardous waste materials would occur.

ALTERNATIVES 2, 3 AND 4: BUILD ALTERNATIVES

The Build Alternatives would involve disturbance of existing soils and structures; therefore, hazardous soil contaminants (total petroleum hydrocarbons [TPH], LBP, and ADL) and structural materials (PCBs, LBP, and ACM) may be encountered during project construction. Although the existing bridges will not be affected by project construction, one residential structure on a parcel that will be acquired for project construction will require an ACM and LBP survey when the building is demolished.

Contact with hazardous materials during construction would be minimized through a pre-construction site investigation and sampling of suspect hazardous materials. Soils exceeding State criteria for hazardous waste are required to be disposed of at the appropriate Class I or II facility.

Each of the Build Alternatives has a similar potential to be affected by existing hazardous waste/materials generators or handling sites, because the number of these sites within the right-of-way and vicinity of each Build Alternative is similar. Site investigations would be performed on all hazardous materials sites within the right-of-way to determine whether hazardous waste/materials are present on site and approved investigation, remediation, and disposal procedures for contaminated sites would be followed. A Site Investigation Work Plan will be prepared and submitted to Caltrans for review and approval prior to soil testing.

Hazardous waste/materials have the potential to be present in building materials, utilities, and paint. Structures and asphalt/concrete paving materials that would be removed or modified as part of the project may contain ACMs, PCBs, mercury or LBP, and/or other hazardous materials, which could be released into the environment if not properly handled, removed, and disposed. In addition, transformers that would be removed or relocated during construction of the project should be considered PCB-containing unless labeled or tested otherwise. Leaking transformers that impact adjacent soils would be a concern during project construction because they could affect construction workers and the environment. Traffic striping and pavement-marking materials (paint, thermoplastic, permanent tape, and temporary tape) that would be removed as part of the project may contain elevated concentrations of metals such as lead. Removal of these materials during project construction could affect construction workers and the surrounding environment. Consistent with Caltrans policies, as well as local, State, and federal regulations, investigation, remediation, and disposal procedures for hazardous building materials would be followed.

Aerially deposited lead (ADL) from the historical use of leaded gasoline, exists along roadways throughout California. There is the likely presence of soils with elevated concentrations of lead as a result of ADL on the state highway system right of way within the limits of the project alternatives. Soil determined to contain lead concentrations exceeding stipulated thresholds must be managed under the July 1, 2016, ADL Agreement between Caltrans and the California Department of Toxic Substances Control. This ADL Agreement allows such soils to be safely reused within the project limits as long as all requirements of the ADL Agreement are met. As identified above, a recent ADL study has been completed for the I-15 CIP from the San Bernardino-Riverside County Line to near Murrieta, which included the segment of the project. This ADL study concluded that no significant risks from ADL deposits exist within the project limits. Soil borings conducted for the ADL study revealed that soils are non-hazardous.

Parcels with current use or evidence of past use may contain elevated concentrations of pesticides. Excavation of pesticide-impacted soil could affect construction workers and the surrounding environment. Consistent with Caltrans policies, as well as local, State, and federal regulations, investigation, remediation, and disposal procedures with respect to pesticides would be followed.

Previously unknown contaminants could be encountered at the commercial and residential properties to be acquired as part of the project due to poor housekeeping, improperly stored chemicals, or past spills. If not handled properly, these contaminants could affect construction workers and the surrounding environment. Consistent with Caltrans policies, as well as local, State, and federal regulations, investigation, remediation, and disposal procedures for previously unknown hazardous waste/materials would be followed.

Typical hazardous materials used during construction (e.g., solvents, paints, and fuels) would be handled in accordance with standard procedures. There are Caltrans policies (avoidance and minimization measures) as well as local, State, and federal regulations that must be followed with respect to investigation, use, storage, handling, disposal, and transport of potentially hazardous materials during implementation of all Build Alternatives to protect human health and the environment.

Although Alternative 4 would require partial parcel acquisitions that are in the vicinity of LUST sites, it is not anticipated that groundwater or soil impacts associated with these LUSTs would be encountered during construction. This is because (1) the potential soil impacts from these LUSTs appear to be contained on site, and are not anticipated to affect the proposed partial acquisitions area, and (2) groundwater would not be encountered during project construction because groundwater levels are expected to be below the maximum depth of excavation.

2.14.3.2 Permanent Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

The No Build Alternative would not change the existing physical environment; therefore, no permanent impacts would occur. As with the build alternatives, routine maintenance activities would continue and would be required to follow applicable regulations with respect to handling and disposal of potentially hazardous materials.

BUILD ALTERNATIVES 2, 3, AND 4

Build Alternatives. Implementation of any of the Build Alternatives includes ramp improvements and reconfigurations to the existing I-15/Railroad Canyon Road interchange and the construction of a new freeway interchange north of the existing I-15/Franklin Street overcrossing. The Build Alternatives could result in hazardous materials spills as a result of traffic accidents on the facility. In addition, vehicles traveling on the facility may transport hazardous substances that could spill and impact the roadway and adjacent properties. However, transport of hazardous materials is subject to strict regulations. In addition, Caltrans, the California Highway Patrol, and local police and fire departments are trained in emergency response procedures for safely responding to accidental spills of hazardous substances on public roads, which further reduces impacts. In addition, the project would be designed to current safety standards, which would reduce the possibility of accidents compared to older roadways that are not designed to current standards. Therefore, impacts related to potential spills on the facility would not be adverse.

The number of hazardous waste/materials sites in the vicinity of the Build Alternatives is similar for each alternative. Therefore, each of the Build Alternatives has a similar potential to be affected by existing hazardous waste/materials sites. However, property owners that use, store, and/or generate hazardous waste/materials are responsible for complying with local, State, and federal regulations with respect to these substances and are also responsible for any cleanup required after a release. A new transportation facility such as the project would not affect the operation of the hazardous waste/materials sites in the vicinity or increase the potential for a hazardous substance release at these sites. Therefore, potential impacts related to hazardous waste/materials sites in the vicinity of the Build Alternatives, once the project is constructed, would not be considered adverse.

Routine maintenance activities during operation of the project would involve the use of hazardous materials such as solvents, paints, vehicle fuels, and pesticides. These activities would be required to follow manufacturers' instructions and comply with existing federal, State, and local regulations with respect to the use, storage, handling, transport, and disposal of potentially hazardous materials. These activities would be required to follow applicable regulations so that the handling of these materials during maintenance activities would not result in a release into the environment. Therefore, implementation of any of the Build Alternatives would not result in adverse impacts related to hazardous waste or materials.

CEQA DISCUSSION

Would the project:

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

Less Than Significant Impact. Potentially hazardous materials, such as petroleum products, and other household products such as paint products, solvents, and cleaning products may be stored on site during the construction of the project. However, all activity involving hazardous substances is currently conducted in accordance with applicable local, State, and Federal safety standards. The project would be required to adhere to any applicable local, State, and Federal safety standards associated with the handling of these materials. In addition, the amount of such materials utilized at the project site during construction is anticipated to be used in small quantities on an as-needed basis.

Routine maintenance activities during operation of the project would be required to follow applicable regulations with respect to the use, storage, handling, transport, and disposal of potentially hazardous materials. Therefore, implementation of the project would not result in adverse impacts related to hazardous waste or materials. Therefore, potential impacts associated with the use, transport, storage, and disposal of hazardous materials would be less than significant. No mitigation is required.

VIII. b) Create a significant hazard to the public or the environment through reasonable foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Less Than Significant Impact. Refer to CEQA Response a) above.

VIII. c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

No Impact. The closest existing or proposed school to the project site is Railroad Canyon Elementary School located approximately 0.5 mile southwest of the project site. Since no existing schools or proposed schools are within 0.25 mile of the project site, no impacts associated with this issue would occur. No mitigation is required.

VIII. d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Less Than Significant Impact. Although the project would require partial parcel acquisitions that are in the vicinity of leaking underground storage tank (LUST) sites, it is not anticipated that groundwater or soil impacts associated with these LUSTS would be encountered during construction. This is because: (1) the potential soil impacts from these LUSTS appear to be contained on-site, and are not anticipated to affect the proposed partial acquisition areas, and, (2) groundwater would not be encountered during project construction because groundwater levels are below the maximum depth of excavation. Adherence to **Minimization Measures HAZ-1** through **HAZ-7**, which are standard conditions present below in Section 2.14.4, would ensure that impacts associated with this issue remain less than significant.

The project would involve disturbance of existing soils and structures; therefore, hazardous soil contaminants (lead-based paint [LBP] and aerially-deposited lead [ADL]) and structural materials (polychlorinated biphenyls [PCBs], LBP, and asbestos-containing materials [ACM]) may be encountered during project construction. Typical hazardous materials used during construction (e.g., solvents, paints, and fuels) would be handled in accordance with standard procedures. There are Caltrans policies (avoidance and minimization measures) as well as local, State, and federal regulations that must be followed with respect to investigation, use, storage, handling, disposal, and transport of potentially hazardous materials during implementation of the project to protect human health and the environment. Adherence to **Minimization Measures HAZ-1** through **HAZ-7**, which are standard conditions presented below in Section 2.14.4, would ensure that impacts associated with this issue remain less than significant.

VIII. e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles or a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?

No Impact. According to the City of Lake Elsinore's General Plan, there are no public use airports in the City. The closest public use airport to the project site is the March Air Reserve Base, which is 14 miles northeast of the project site. Due to the distance of this airport from the project, implementation of the project would not result in a safety hazard for people residing or working in the area. No mitigation is required.

VIII. f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?

Less Than Significant Impact. The project site is located north of Skylark Field, a private air facility utilized for skydiving (Skydive Elsinore). Skylark Airport is a privately owned airport that occupies approximately 150 acres of land located at the southern city limits on Corydon Road. The airport houses 21 single-engine aircraft, five multi-engine aircraft, and four gliders. The Skylark Airport is utilized for skydiving and other recreational air uses. There is no approved airport land use plan for this air facility. It is anticipated that no additional new safety hazards associated with Skylark Airport would be generated for people working in the project area as the airport is primarily used for skydiving and other recreational air activities. Impacts are less than significant and no mitigation is required.

VIII. g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Less Than Significant Impact. During construction, some impairment to the delivery of services, including fire and police response times, may occur. However, these temporary impacts would be substantially minimized through the implementation of a Transportation Management Plan (TMP).

Construction activities associated with the project would result in temporary road detours and access restrictions during construction, which may result in some impairment to the delivery of services, including fire and police response. However, significant disruptions to the local access network within the study area are not anticipated with implementation of a TMP. Adherence to **Minimization Measure TR-1**, a standard condition presented below in Section 2.14.4, would ensure impacts remain less than significant related to emergency response plans and emergency evacuation plans.

VIII. h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?

Less Than Significant Impact. Portions of the project site are identified as being within a "very high" wildfire zone.[1] However, the project site is currently developed with a series of existing highway facilities and access roads. The project site is currently sparsely vegetated and surrounded by developed commercial and residential uses. The project would not expose people or property to new increased wildland fire risks. However, construction activities may slightly increase fire risks. Adherence to **Minimization Measure UES-4**, a standard condition presented above in Section 2.6.3, would minimize the temporary potential impacts from construction activities that may result in a slight increase in fire risk and ensure impacts remain less than significant. No mitigation is required.

2.14.4 Avoidance, Minimization, and/or Mitigation Measures

The following measures are required to avoid, minimize, and/or mitigate potential project impacts related to hazardous waste or materials:

[1] Figure 3.1 City of Lake Elsinore Wildfire Susceptibility, *City of Lake Elsinore General Plan Update,* December 2011.

Minimization Measures

HAZ-1 **Site Investigations.** During final design, site investigations and soil testing will be conducted for hazardous materials sites identified in the *Updated Initial Site Assessment* (ISA) (November 22, 2016) that are within the right-of-way of Alternative 2 for implementation.

HAZ-1A The Site Investigation Report will be submitted to the California Department of Transportation (Caltrans) District 8 Hazardous Waste Coordinator for review and approval of areas within State right-of-way.

If contaminants are determined to be present during the site investigations, the City Project Manager, in consultation with the Contract Qualified Engineer/ Geologist, may determine that one or more of the following specialized reports may be necessary: Remedial Actions Options Report, Soil Management Plan, Sensitive Receptor Survey, Human Health/Ecological Risk Assessment, and/or Quarterly Monitoring Report.

These reports will be submitted to the Caltrans District 8 Hazardous Waste Coordinator, as well as to the applicable oversight agency for review and approval of areas within State right-of-way.

HAZ-1B The City Project Manager will require the Contract Qualified Engineer/Geologist to prepare a work plan for approval by the Riverside County Department of Environmental Health, and if groundwater has been impacted, to also coordinate with the Regional Water Quality Control Board (RWQCB), Santa Ana Region, for all site investigations for leaking underground storage tanks (LUSTs). The City Project Manager will require the Contract Qualified Engineer/Geologist to conduct those site investigations consistent with the work plan approved by the Riverside County Department of Environmental Health and/or the RWQCB as appropriate.

The City Project Manager will require the Contract Qualified Engineer/Geologist to coordinate all site investigations for any automotive or industrial uses to be coordinated with the Riverside County Department of Environmental Health. Site investigations for any clandestine drug lab locations will be coordinated with the Riverside County Department of Environmental Health, the California Department of Toxic Substances Control (DTSC), and law enforcement agencies with jurisdiction in the area of the suspected drug lab.

Prior to completion of final design, the City Project Manager will require the Contract Qualified Engineer/Geologist to prepare a Hazardous Materials Disclosure Document that clears affected right-of-way for acquisition. The City Project Manager will submit the Hazardous Materials Disclosure Document to the Caltrans District 8 Hazardous Waste Coordinator for review.

HAZ-2 **Traffic Stripe and Pavement Markings.** Prior to any site preparation, disturbance, grading, and construction, the City Resident Engineer will require the Construction Contractor to test and remove any striping paint and pavement-marking material in accordance with the Caltrans Standard Special Provisions.

During site preparation, disturbance, and construction, the City Resident Engineer will require the Construction Contractor to remove striping and pavement-marking material in accordance with Caltrans Standard Special Provisions.

HAZ-3 **Hazardous Building Materials Surveys.** Prior to any site preparation, disturbance, and construction, the City Resident Engineer will require a certified consultant under contract to Riverside County Transportation Commission (RCTC) to conduct predemolition hazardous materials surveys for all potentially hazardous materials such as asbestos, lead-based paint, mercury, and polychlorinated biphenyl (PCB) surveys of any structures that will be renovated or demolished.

Based on the results of the testing conducted by the certified consultant and prior to the demolition or renovation of any structures determined to contain hazardous materials that exceed the California Health and Safety Code criteria for hazardous waste, the City Resident Engineer will require the Construction Contractor to properly remove, store, transport and dispose of (at an appropriate Class I or II facility) any building materials that exceed the California Health and Safety Code criteria for hazardous waste.

HAZ-4 **Site Work Plan and Procedures.** Prior to soil excavations, a Site Investigation Work Plan will be prepared and submitted to Caltrans for review and approval. During final design, soil testing shall be conducted. During construction, soil excavations conducted on site shall be monitored by the construction contractor for visible soil staining, odor, and the possible presence of unknown hazardous material sources, such as buried 55-gallon drums and underground tanks. If hazardous materials contamination or sources are suspected or identified during project construction activities, an environmental professional shall evaluate the course of action required. This course of action shall follow the Unknown Hazards Procedures described in Chapter 7 of August 2006 Caltrans' *Construction Manual*.

HAZ-5 **Reconnaissance Interviews.** During the right-of-way appraisal and acquisition process, due to the presence of stored vehicles on residential sites required for parcel acquisitions, additional site reconnaissance and owner interviews should be performed to fill data gaps and identify any potential soil impacts that may require additional testing.

HAZ-6 **Soil Sampling for VOCs and PCBs.** Prior to completion of right-of-way acquisition and during final design, the City Resident Engineer will require a qualified consultant (Contract Qualified Consultant) under contract to the City to conduct soil sampling for volatile organic compounds (VOCs), PCBs, or heavy metals due to vehicle storage on parcels required for either full or partial acquisitions. Soils near the house foundation should also be analyzed for persistent organochlorine pesticides and lead.

It is not feasible to conduct soil sampling and, if needed, remediation, and include the results of those activities in the Final Initial Study/ Environmental Assessment (IS/EA) because the City does not currently own the properties that may require these investigations. Any such testing and remediation could result in ground disturbance or disturbance of existing structures, which are activities that need to be undertaken as part of the project implementation itself. In addition, new contamination may occur if those investigations are conducted too far in advance of property acquisition.

The analytical results of the soil sampling will determine the appropriate handling and disposal of the soil.

HAZ-7 **Utility Inspections.** During final design, interviews with the owners of the parcels with cell towers required for acquisition should be conducted in order to determine chemical use and storage on site. Prior to any site preparation, disturbance, grading, and construction, the City Resident Engineer will require a qualified consultant (Contract Qualified Consultant) under contract to the City to conduct inspections of utility pole-mounted transformers that will be relocated or removed as part of the project. Any identified leaking transformers will be considered a PCB hazard unless tested and confirmed otherwise by the Contract Qualified Consultant. For any confirmed PCBs, the City Resident Engineer will require the Construction Contractor to remove, handle, store, and dispose of them and any affected soils consistent with applicable laws and regulations.

This page intentionally left blank

2.15 Air Quality

2.15.1 Regulatory Setting

The Federal Clean Air Act (FCAA) as amended is the primary federal law that governs air quality while the California Clean Air Act is its companion State law. These laws, and related regulations by the United States Environmental Protection Agency (U.S. EPA) and California Air Resources Board (ARB), set standards for the quantity of pollutants that can be in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). NAAQS and State ambient air quality standards have been established for six transportation-related criteria pollutants that have been linked to potential health concerns: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM), which is broken down for regulatory purposes into particles of 10 micrometers or smaller (PM_{10}) and particles of 2.5 micrometers and smaller ($PM_{2.5}$), and sulfur dioxide (SO_2). In addition, national and state standards exist for lead (Pb) and State standards exist for visibility reducing particles, sulfates, hydrogen sulfide (H_2S), and vinyl chloride. The NAAQS and State standards are set at a level that protects public health with a margin of safety, and are subject to periodic review and revision. Both State and federal regulatory schemes also cover toxic air contaminants (air toxics); some criteria pollutants are also air toxics or may include certain air toxics within their general definition.

Federal air quality standards and regulations provide the basic scheme for project-level air quality analysis under the National Environmental Policy Act (NEPA). In addition to this type of environmental analysis, a parallel “Conformity” requirement under the FCAA also applies.

Conformity

The conformity requirement is based on Federal Clean Air Act Section 176(c), which prohibits the U.S. Department of Transportation (USDOT) and other federal agencies from funding, authorizing, or approving plans, programs or projects that do not conform to State Implementation Plan (SIP) for attainting the NAAQS. “Transportation Conformity” applies to highway and transit projects and takes place on two levels: the regional—or, planning and programming—level and the project level. The proposed project must conform at both levels to be approved.

Conformity requirements apply only in nonattainment and “maintenance” (former nonattainment) areas for the NAAQS, and only for the specific NAAQS that are or were violated. U.S. EPA regulations at 40 Code of Federal Regulations (CFR) 93 govern the conformity process. Conformity requirements do not apply in unclassifiable/attainment areas for NAAQS and do not apply at all for state standards regardless of the status of the area.

Regional conformity is concerned with how well the regional transportation system supports plans for attaining the NAAQS for carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM_{10} and $PM_{2.5}$), and in some areas (although not in California) sulfur dioxide (SO2). California has attainment or maintenance areas for all of these transportation-related “criteria pollutants” except SO_2, and also has a nonattainment area for lead (Pb); however, lead is not currently required by the FCAA to be covered in transportation conformity analysis. Regional conformity is based on emission analysis of Regional Transportation Plans (RTPs) and Federal Transportation Improvement Programs (FTIPs) that include all transportation projects planned for a region over a period of at least 20 years for the RTP) and 4 years (for the FTIP). RTP and FTIP conformity uses travel demand and emission models to determine whether or not the implementation of those projects would conform to emission budgets or other tests at various analysis years showing that requirements of the Clean Air Act and the SIP are met. If the conformity analysis is successful, the Metropolitan Planning Organization (MPO), Federal Highway Administration (FHWA), and Federal Transit Administration (FTA), make determinations that the RTP and FTIP are in conformity with the SIP for achieving the goals of the FCAA. Otherwise, the projects in the RTP and/or FTIP must be modified until conformity is attained. If the design concept, scope, and "open-to-traffic" schedule of a proposed transportation project are the same as described in the RTP and FTIP, then the proposed project meets regional conformity requirements for purposes of project-level analysis.

Conformity analysis at the project-level includes verification that the project is included in the regional conformity analysis and a "hot-spot" analysis if an area is "nonattainment" or "maintenance" for carbon monoxide (CO) and/or particulate matter (PM_{10} or $PM_{2.5}$). A region is "nonattainment" if one or more of the monitoring stations in the region measures a violation of the relevant standard and the U.S. EPA officially designates the area nonattainment. Areas that were previously designated as nonattainment areas but subsequently meet the standard may be officially redesignated to attainment by U.S. EPA and are then called "maintenance" areas. "Hot-spot" analysis is essentially the same, for technical purposes, as CO or particulate matter analysis performed for NEPA purposes. Conformity does include some specific procedural and documentation standards for projects that require a hot-spot analysis. In general, projects must not cause the "hot-spot" related standard to be violated, and must not cause any increase in the number and severity of violations in nonattainment areas. If a known CO or particulate matter violation is located in the project vicinity, the project must include measures to reduce or eliminate the existing violation(s) as well.

2.15.2 Affected Environment

This section is based on the following documents prepared for the project:

- *Air Quality Report* (April 2015)
- *Air Quality Conformity Analysis* (June 2017)

2.15.2.1 Climate

The project is located in the South Coast Air Basin (Basin), which includes Orange County and the non-desert parts of Los Angeles, Riverside, and San Bernardino Counties. Air quality regulation in the Basin is administered by the South Coast Air Quality Management District (SCAQMD).

Climate in the Basin is determined by its terrain and geographical location. The Basin is a coastal plain with connecting broad valleys and low hills. The Pacific Ocean forms the southwestern boundary, and high mountains surround the rest of the Basin. The region lies in the semipermanent high-pressure zone of the eastern Pacific. The resulting climate is mild and tempered by cool ocean breezes. This climatological pattern is rarely interrupted. However, periods of extremely hot weather, winter storms, and Santa Ana wind conditions do occur.

The annual average temperature varies little throughout the Basin, ranging from the low to middle 60s, measured in degrees Fahrenheit (°F). With a more pronounced oceanic influence, coastal areas show less variability in annual minimum and maximum temperatures than inland areas. The climatological station closest to the site monitoring temperature is the Elsinore Station. The annual average maximum temperature recorded at this station is 80.5°F, and the annual average minimum is 47.7°F. January is typically the coldest month in this area of the Basin.

The majority of annual rainfall in the Basin occurs between November and April. Summer rainfall is minimal and generally limited to scattered thundershowers in coastal regions and slightly heavier showers in the eastern portion of the Basin along the coastal side of the mountains. The climatological station closest to the site that monitors precipitation is the Elsinore Station. Average rainfall measured at this station varied from 2.47 inches in February to 0.41 inch or less between May and October, with an average annual total of 11.37 inches. Patterns in monthly and yearly rainfall totals are unpredictable due to fluctuations in the weather.

The Basin experiences a persistent temperature inversion (increasing temperature with increasing altitude) as a result of the Pacific high. This inversion limits the vertical dispersion of air contaminants, holding them relatively near the ground. As the sun warms the ground and the lower air layer, the temperature of the lower air layer approaches the temperature of the base of the inversion (upper) layer until the inversion layer finally breaks, allowing vertical mixing with the lower layer. This phenomenon is observed from midafternoon to late afternoon on hot summer days, when the smog appears to clear up suddenly. Winter inversions frequently break by midmorning.

Inversion layers are significant in determining ozone (O_3) formation. O_3 and its precursors will mix and react to produce higher concentrations under an inversion. The inversion will also simultaneously trap and hold directly emitted pollutants such as carbon monoxide (CO). Particulate matter less than 10 microns in size (PM_{10}) is both directly emitted and indirectly created in the atmosphere as a result of chemical reactions. Concentration levels of these pollutants are directly related to inversion layers due to the limitation of mixing space.

Surface or radiation inversions are formed when the ground surface becomes cooler than the air above it during the night. The earth's surface goes through a radiative process on clear nights, when heat energy is transferred from the ground to a cooler night sky. As the earth's surface cools during the evening hours, the air directly above it also cools, while air higher up remains relatively warm. The inversion is destroyed when heat from the sun warms the ground, which in turn heats the lower layers of air; this heating stimulates the ground level air to float up through the inversion layer.

The combination of stagnant wind conditions and low inversions produces the greatest concentration of pollutants. On days of no inversion or high wind speeds, ambient air pollutant concentrations are the lowest. During periods of low inversions and low wind speeds, air pollutants generated in urbanized areas in Los Angeles and Orange Counties are transported predominantly onshore into Riverside and San Bernardino Counties. In the winter, the greatest pollution problems are CO and oxides of nitrogen (NO_X) because of extremely low inversions and air stagnation during the night and early morning hours. In the summer, the longer daylight hours and the brighter sunshine combine to cause a reaction between hydrocarbons and NO_X to form photochemical smog.

2.15.2.2 Monitored Air Quality

The SCAQMD operates several air quality monitoring stations within the Basin. The Lake Elsinore Air Quality Monitoring Station, located approximately 2 miles northwest of the project site at 506 W. Flint Street, Lake Elsinore, California, monitors three of the five criteria pollutants: CO, O_3, and NO_2. The next closest monitoring station with particulate matter and SO_2 data is the Rubidoux Station, which is located approximately 22 miles north of the project site at 5888 Mission Boulevard, Riverside, California. Air quality trends identified from data collected at both air quality monitoring stations between 2011 and 2013 are listed in Table 2.15.A, Ambient Air Quality Standards at the Lake Elsinore and Rubidoux Air Monitoring Stations, and discussed below. Figure 2.15.1 shows the locations of the Basin monitoring stations.

From the ambient air quality data provided in Table 2.15.A, it can be seen that CO, SO_2, and NO_2 levels are below the relevant State and Federal standards at the Lake Elsinore and Rubidoux Stations. One-hour ozone levels exceeded the State standards in each of the past 3 years. Eight-hour ozone levels exceeded the federal standard in each of the past 3 years. The PM_{10} levels in the project area did not exceed State or Federal 24-hour concentration standards in the past 3 years; however the annual average concentration of PM_{10} exceeded the State standard in each of the past 3 years. The $PM_{2.5}$ levels in the project area exceeded the Federal 24-hour concentration standard in each of the past 3 years, as well as the State and Federal annual average concentration standards for each of the past 3 years.

As part of the Clean Air Rules of 2004, the United States Environmental Protection Agency (EPA) published a final rule in the Federal Register on July 1, 2004, to amend the Transportation Conformity Rule to include criteria and procedures for the new 8-hour O_3 and $PM_{2.5}$ NAAQS. The final rule addressed a March 2, 1999, court decision by incorporating the EPA and USDOT guidance. On July 20, 2004, the EPA published a technical correction notice to correct two minor errors in the July 1, 2004, notice. To remain consistent with the stricter federal standards, the ARB approved a new 8-hour O_3 standard (0.07 parts per million [ppm], not to be exceeded) for O_3 on April 28, 2005. Additionally, the ARB retained the current 1-hour-average standard for O_3 (0.09 ppm) and the current monitoring method for O_3, which uses the ultraviolet photometry method.

In April 2003, the EPA was cleared by the White House Office of Management and Budget (OMB) to implement the 8-hour ground-level O_3 standard. The ARB provided the EPA with California's recommendations for 8-hour O_3 area designations on July 15, 2003. The recommendations and supporting data were an update to a report submitted to the EPA in July 2000. On December 3, 2003, the EPA published its proposed designations. The EPA's proposal differs from the State's recommendations primarily on the appropriate boundaries for several nonattainment areas. The ARB responded to the EPA's proposal on February 4, 2004. On April 15, 2004, the EPA announced the new nonattainment areas for the 8-hour O_3 standard. The designations and classifications became effective on June 15, 2004. The transportation conformity requirement became effective on June 15, 2005.

The EPA proposed a $PM_{2.5}$ implementation rule in September 2003 and made final designations in December 2004. The $PM_{2.5}$ standard complements existing national and State ambient air quality standards that target the full range of inhalable PM_{10}.

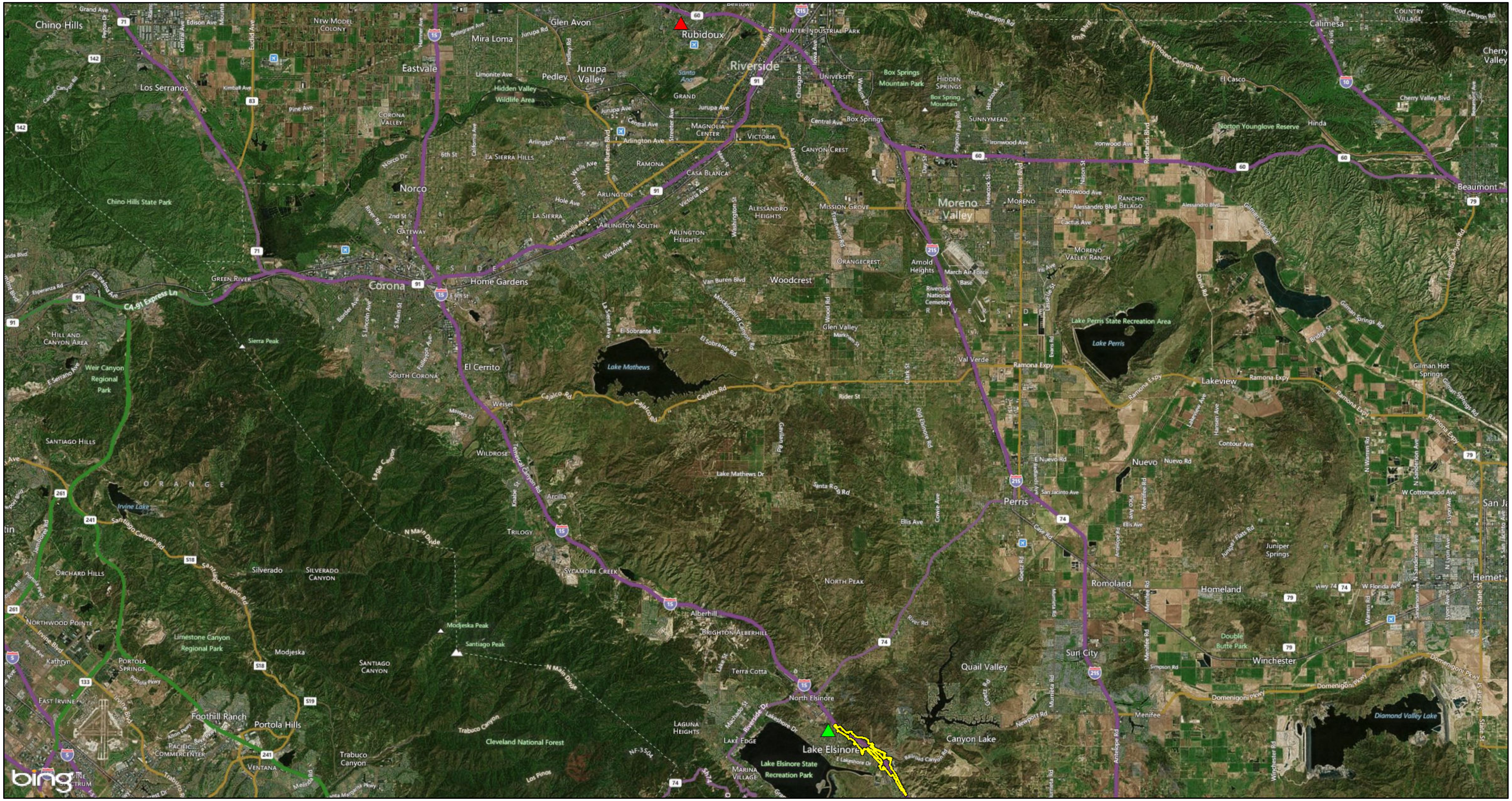


FIGURE 2.15.1

Project Study Area
Lake Elsinore Air Quality Monitoring Station
Rubidoux Air Quality Monitoring Station

0 1.5 3
MILES

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Locations of Air Quality Monitoring Stations in the South Coast Air Basin

SOURCE: Bing Aerial, 2015; Air Quality District

I:\SAE1401\Reports\IS_EA\fig2-15-1_AQ_MonitorSta.mxd (12/21/2015)

This page intentionally left blank

Table 2.15.A: Ambient Air Quality Standards at the Lake Elsinore and Rubidoux Air Monitoring Stations

Pollutant		Standard	2011	2012	2013	2014	2015
Carbon Monoxide[1]							
Max 1 hr concentration (ppm)			2.7	2.7	3.3	1.9	0.7
No. days exceeded:	State Federal	> 20 ppm/1 hr > 35 ppm/1 hr	0 0	0 0	0 0	0 0	0 0
Max 8 hr concentration (ppm)			0.67	0.52	0.8	1.4	0.4
No. days exceeded:	State Federal	9 ppm/8 hr 9 ppm/8 hr	0 0	0 0	0 0	0 0	0 0
Ozone[1]							
Max 1 hr concentration (ppm)			0.133	0.111	0.102	.1404	0.131
No. days exceeded:	State	> 0.09 ppm/1 hr	19	10	6	4	13
Ozone[1]							
Max 8 hr concentration (ppm)			0.106	0.089	0.102	0.086	0.098
No. days exceeded:	State	>0.07ppm/8 hr	45	32	25	13	24
No. days exceeded:	Federal	> 0.075 ppm/8 hr	28	17	12	8	11
Particulates (PM_{10})[2]							
Max 24 hr concentration (ppm)			82.7	67.0	135.0	86	61
No. days exceeded:	State Federal	> 50 μg/m^3 > 150 μg/m^3	0 0	0 0	0 0	119 0	95 0
		Annual average concentration (μg/m^3)	32.5	33.4	34.6	26	36.3
Exceeds Standard?	State	>20 μg/m^3	Yes	Yes	Yes	Yes	Yes
Particulates ($PM_{2.5}$)[2]							
Max 24 hr concentration (ppm)			60.8	38.1	60.3	48.9	54.7
No. days exceeded:	Federal[2]	> 35 μg/m^3	4	7	6	4	5
Annual average concentration (μg/m^3)			13.5	13.5	12.4	12.5	10.4
Exceeds Standard?	State Federal	> 12 μg/m^3 > 12 μg/m^3	Yes Yes	Yes Yes	Yes Yes	Yes Yes	No No
Nitrogen Dioxide							
Max 1 hr concentration (ppm):	State	> 0.18 ppm/1 hr	0.0503	0.0483	0.0465	0.0453	0.046
No. days exceeded			0	0	0	0	0
Annual avg concentration:	Federal	0.053 ppm annual avg	0.009	0.010	N/A	0.015	0.009
No. days exceeded			0	0	N/A	0	0
Sulfur Dioxide[2]							
Max 24 hr concentration (ppm)			0.001	0.001	N/A	0.001	0.0008
No. days exceeded:	State Federal	0.04 ppm 0.14 ppm	0 0	0 0	0 0	0 0	0 0
Annual avg concentration:	Federal	0.030 ppm annual avg	0.000	N/A	N/A	0.026	0.026
No. days exceeded			No	N/A	N/A	0	0

Source: United States Environmental Protection Agency and California Air Resources Board (2011 to 2013).
1 Air monitoring data obtained from the Lake Elsinore Station.
2 Air monitoring data obtained from the Rubidoux Station.

ug/m^3 = micrograms per cubic meter
avg = average
ARB = California Air Resources Board
EPA = United States Environmental Protection Agency
hr = hour ppm = parts per million
max = maximum
N/A = not applicable
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size

Air quality monitoring stations are located throughout the nation and maintained by the local air districts and State air quality regulating agencies. Data collected at permanent monitoring stations are used by the EPA to identify regions as “attainment,” “nonattainment,” or “maintenance,” depending on whether the regions meet the requirements stated in the primary NAAQS. Nonattainment areas are imposed with additional restrictions as required by the EPA. In addition, different classifications of nonattainment, such as marginal, moderate, serious, severe, and extreme, are used to classify each air basin in the State on a pollutant-by-pollutant basis. The classifications are used as a foundation to create air quality management strategies to improve air quality and comply with the NAAQS. Table 2.15.B lists the attainment status for each of the criteria pollutants in the Basin.

2.15.3 Regional Air Quality Conformity

Regional conformity is concerned with how a region is achieving and maintaining compliance with air quality standards. At the regional level, plans such as the RTP, Regional Transportation Improvement Program (RTIP), and Federal Transportation Improvement Program (FTIP) are developed to address all the planned transportation projects for a period of 20 years. These plans are periodically updated and require FHWA approval subsequent to each update. Southern California Association of Governments (SCAG) is the regional planning organization with responsibility to produce and update the RTP, RTIP, and FTIP for the Southern California region. As part of the RTP, RTIP, and FTIP preparation, SCAG evaluates and analyzes the planned transportation projects with respect to impacts and current and future air quality. Subsequent to these analyses, SCAG makes a determination of conformity for all planned projects. If the project, with respect to design and scope, is essentially the same as that listed in the RTP, RTIP and FTIP, then the project is deemed to be in conformity at the regional level. The project was determined to be in regional conformity.

The project is listed in the 2016 financially constrained Regional Transportation Plan/ Sustainable Communities Strategy (RTP/SCS) Amendment No. 1, which was found to conform to the State Implementation Plan (SIP) by the SCAG on April 12, 2017, and FHWA and FTA made a regional conformity determination finding on May 12, 2017. The project is also included in the SCAG financially constrained 2017 Federal Transportation Improvement Program in Amendment 17-03, page 4, for which FHWA and FTA also made a regional conformity determination finding on May 12, 2017. The design concept and scope of the proposed project is consistent with the project description in the 2016 RTP/SCS, 2017 FTIP, and the “open to traffic” assumptions of the SCAG’s regional emissions analysis.

2.15.3.1 Project Level Conformity

The EPA has established NAAQS for NO_2, CO, O_3, SO_2, particulate matter less than 10 microns in diameter (PM_{10}), particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), and airborne lead to protect public health and welfare. In general, if these standards are exceeded in a defined geographic area at a rate of four or more occurrences in any consecutive 3-year period, the area is considered a “nonattainment area” subject to regulatory control requirements that are more stringent than attainment area requirements.

Table 2.15.B State and Federal Criteria Air Pollutant Standards, Effects, and Sources

Pollutant	Averaging Time	State Standard[1]	Federal Standard[2]	Principal Health and Atmospheric Effects	Typical Sources	Attainment Status
Ozone (O_3)[2]	1 hour 8 hours	0.09 ppm[3] 0.070 ppm	---[4] 0.070 ppm (4th highest in 3 years)	High concentrations irritate lungs. Long-term exposure may cause lung tissue damage and cancer. Long-term exposure damages plant materials and reduces crop productivity. Precursor organic compounds include many known toxic air contaminants. Biogenic VOC may also contribute.	Low-altitude ozone is almost entirely formed from reactive organic gases/volatile organic compounds (ROG or VOC) and nitrogen oxides (NO_X) in the presence of sunlight and heat. Common precursor emitters include motor vehicles and other internal combustion engines, solvent evaporation, boilers, furnaces, and industrial processes.	Federal: Extreme Nonattainment (8-hour) State: Nonattainment (1-hour and 8-hour)
Carbon Monoxide (CO)	1 hour 8 hours 8 hours (Lake Tahoe)	20 ppm 9.0 ppm[1] 6 ppm	35 ppm 9 ppm ---	CO interferes with the transfer of oxygen to the blood and deprives sensitive tissues of oxygen. CO also is a minor precursor for photochemical ozone. Colorless, odorless.	Combustion sources, especially gasoline-powered engines and motor vehicles. CO is the traditional signature pollutant for on-road mobile sources at the local and neighborhood scale.	Federal: Attainment - Unclassified State: Attainment
Respirable Particulate Matter (PM_{10})[5]	24 hours Annual	50 $\mu g/m^3$[3 6] 20 $\mu g/m^3$	150 $\mu g/m^3$ (expected number of days above standard < or equal to 1) ---[5]	Irritates eyes and respiratory tract. Decreases lung capacity. Associated with increased cancer and mortality. Contributes to haze and reduced visibility. Includes some toxic air contaminants. Many toxic & other aerosol and solid compounds are part of PM_{10}.	Dust- and fume-producing industrial and agricultural operations; combustion smoke and vehicle exhaust; atmospheric chemical reactions; construction and other dust-producing activities; unpaved road dust and re-entrained paved road dust; natural sources.	Federal: Attainment/Maintenance State: Nonattainment
Fine Particulate Matter ($PM_{2.5}$)[5]	24 hours Annual 24 hours (conformity process[7]) Secondary Standard (annual; also for conformity process[5])	--- 12 $\mu g/m^3$ --- ---	35 $\mu g/m^3$ 12.0 $\mu g/m^3$ 65 $\mu g/m^3$ 15 $\mu g/m^3$ (98th percentile over 3 years)	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and produces surface soiling. Most diesel exhaust particulate matter – a toxic air contaminant – is in the $PM_{2.5}$ size range. Many toxic & other aerosol and solid compounds are part of $PM_{2.5}$.	Combustion including motor vehicles, other mobile sources, and industrial activities; residential and agricultural burning; also formed through atmospheric chemical and photochemical reactions involving other pollutants including NO_X, sulfur oxides (SO_X), ammonia, and ROG.	Federal: Nonattainment State: Nonattainment
Nitrogen Dioxide (NO_2)	1 hour Annual	0.18 ppm 0.030 ppm	0.100 ppm[8] 0.053 ppm	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown. Contributes to acid rain & nitrate contamination of stormwater. Part of the "NO_X" group of ozone precursors.	Motor vehicles and other mobile or portable engines; especially diesel; refineries; industrial operations.	Federal: Attainment - Unclassified State: Attainment
Sulfur Dioxide (SO_2)	1 hour 3 hours 24 hours Annual	0.25 ppm --- 0.04 ppm ---	0.075 ppm[9] (99th percentile over 3 years) 0.5 ppm[10] 0.14 ppm (for certain areas) 0.030 ppm (for certain areas)	Irritates respiratory tract; injures lung tissue. Can yellow plant leaves. Destructive to marble, iron, steel. Contributes to acid rain. Limits visibility.	Fuel combustion (especially coal and high-sulfur oil), chemical plants, sulfur recovery plants, metal processing; some natural sources like active volcanoes. Limited contribution possible from heavy-duty diesel vehicles if ultra-low sulfur fuel not used.	Federal: Attainment State: Attainment
Lead (Pb)[11]	Monthly Calendar Quarter Rolling 3-month average	1.5 $\mu g/m^3$ --- ---	--- 1.5 $\mu g/m^3$ (for certain areas) 0.15 $\mu g/m^3$[12]	Disturbs gastrointestinal system. Causes anemia, kidney disease, and neuromuscular and neurological dysfunction. Also a toxic air contaminant and water pollutant.	Lead-based industrial processes like battery production and smelters. Lead paint, leaded gasoline. Aerially deposited lead from older gasoline may exist in soils along major roads.	Federal: Nonattainment (Los Angeles County only) State: Attainment

Table 2.15.B State and Federal Criteria Air Pollutant Standards, Effects, and Sources

Pollutant	Averaging Time	State Standard[1]	Federal Standard[2]	Principal Health and Atmospheric Effects	Typical Sources	Attainment Status
Sulfate	24 hours	25 μg/m^3	---	Premature mortality and respiratory effects. Contributes to acid rain. Some toxic air contaminants attach to sulfate aerosol particles.	Industrial processes, refineries and oil fields, mines, natural sources like volcanic areas, salt-covered dry lakes, and large sulfide rock areas.	Federal: N/A State: Attainment
Hydrogen Sulfide (H_2S)	1 hour	0.03 ppm	---	Colorless, flammable, poisonous. Respiratory irritant. Neurological damage and premature death. Headache, nausea. Strong odor.	Industrial processes such as refineries and oil fields, asphalt plants, livestock operations, sewage treatment plants, and mines. Some natural sources like volcanic areas and hot springs.	Federal: N/A State: Attainment/Unclassified
Visibility Reducing Particles (VRP)	8 hours	Visibility of 10 miles or more (Tahoe: 30 miles) at relative humidity less than 70 percent	---	Reduces visibility. Produces haze. NOTE: Not related to the Regional Haze program under the Federal Clean Air Act, which is oriented primarily toward visibility issues in National Parks and other "Class I" areas.	See particulate matter above. May be related more to aerosols than to solid particles.	Federal: N/A State: Attainment/Unclassified

Source: Adapted from Sonoma-Marin Narrows Draft EIR and California ARB Air Quality Standards chart (http://www.arb.ca.gov/research/aaqs/aaqs2.pdf).

Greenhouse Gases and Climate Change: Greenhouse gases do not have concentration standards for that purpose. Conformity requirements do not apply to greenhouse gases.

[1] State standards are "not to exceed" or "not to be equaled or exceeded" unless stated otherwise.
[2] Federal standards are "not to exceed more than once a year" or as described above.
[3] ppm = parts per million
[4] Prior to June 2005, the 1-hour ozone NAAQS was 0.12 ppm. Emission budgets for 1-hour ozone are still in use in some areas where 8-hour ozone emission budgets have not been developed, such as the San Francisco Bay Area.
[5] Annual PM_{10} NAAQS revoked October 2006; was 50 μg/m^3. 24-hr. $PM_{2.5}$ NAAQS tightened October 2006; was 65 μg/m^3. Annual $PM_{2.5}$ NAAQS tightened from 15 μg/m^3 to 12 μg/m^3 December 2012 and secondary annual standard set at 15 μg/m^3.
[6] μg/m^3 = micrograms per cubic meter
[7] The 65 μg/m^3 $PM_{2.5}$ (24-hr) NAAQS was not revoked when the 35 μg/m^3 NAAQS was promulgated in 2006. The 15 μg/m^3 annual $PM_{2.5}$ standard was not revoked when the 12 μg/m^3 standard was promulgated in 2012. The 0.08 ppm 1997 ozone standard is revoked FOR CONFORMITY PURPOSES ONLY when area designations for the 2008 0.75 ppm standard become effective for conformity use (July 20, 2013). Conformity requirements apply for all NAAQS, including revoked NAAQS, until emission budgets for newer NAAQS are found adequate, SIP amendments for the newer NAAQS are approved with a emission budget, EPA specifically revokes conformity requirements for an older standard, or the area becomes attainment/unclassified. SIP-approved emission budgets remain in force indefinitely unless explicitly replaced or eliminated by a subsequent approved SIP amendment. During the "Interim" period prior to availability of emission budgets, conformity tests may include some combination of build vs. no build, build vs. baseline, or compliance with prior emission budgets for the same pollutant.
[8] Final 1-hour NO_2 NAAQS published in the Federal Register on February 9, 2010, effective March 9, 2010. Initial area designation for California (2012) was attainment/unclassifiable throughout. Project-level hot spot analysis requirements do not currently exist. Near-road monitoring starting in 2013 may cause re-designation to nonattainment in some areas after 2016.
[9] EPA finalized a 1-hour SO_2 standard of 75 ppb (parts per billion [thousand million]) in June 2010. Nonattainment areas have not yet been designated as of September 2012.
[10] Secondary standard, set to protect public welfare rather than health. Conformity and environmental analysis address both primary and secondary NAAQS.
[11] The ARB has identified vinyl chloride and the particulate matter fraction of diesel exhaust as toxic air contaminants. Diesel exhaust particulate matter is part of PM_{10} and, in larger proportion, $PM_{2.5}$. Both the ARB and U.S. EPA have identified lead and various organic compounds that are precursors to ozone and $PM_{2.5}$ as toxic air contaminants. There are no exposure criteria for adverse health effects due to toxic air contaminants, and control requirements may apply at ambient concentrations below any criteria levels specified above for these pollutants or the general categories of pollutants to which they belong.
[12] Lead NAAQS are not considered in Transportation Conformity analysis.

μg/m^3 = micrograms per cubic meter
ARB = California Air Resources Board
EPA = United States Environmental Protection Agency
N/A = Not Available
NAAQS = national ambient air quality standards
ppb = parts per billion
ppm = parts per million
SIP = State Implementation Plan

Additionally, the California Air Resources Board (ARB) has adopted standards for CO, NO_2, SO_2, O_3, sulfates, PM_{10}, $PM_{2.5}$, and airborne lead at similar levels for the protection of public health and welfare (ARB 2006). ARB has primary jurisdiction in the area of mobile-source regulations, while local air districts such as the SCAQMD have primary responsibility for regulations and enforcement with respect to stationary sources. ARB also monitors local district programs for consistency and compliance with State regulations.

California ambient air quality standards (CAAQS) and the NAAQS are composed of two parts: a specific pollutant concentration and an averaging time over which the concentration is to be measured. Allowable concentrations are based on the results of studies of the effects of the pollutants on public health and welfare. The averaging times are based on whether the effects caused by a specific pollutant will occur over a short-term period (from 1 hour up to 1 day) or a long-term period (from 3 months up to 1 year). Several pollutants have more than one air quality standard and averaging time due to health and/or welfare effects that may occur over both the short and long term. Previously referenced Table 2.15.A identifies the CAAQS and NAAQS for various pollutants. Some of the CAAQS are more stringent than the NAAQS with respect to pollutant concentrations and averaging times.

Typically, for transportation projects involving construction phases, the pollutants of most importance are CO, PM_{10}, and/or $PM_{2.5}$. Table 2.15.B lists the Basin attainment status for each of the criteria pollutants for the CAAQS and NAAQS. Historical air quality data show that existing CO levels for the project area and the general vicinity do not exceed either the State or federal ambient air quality standards. The project would help to improve traffic flow and reduce congestion on roadway links in the project vicinity. The project is located in an attainment/ maintenance area for federal CO standards. Using the California Department of Transportation (Caltrans) *Transportation Project-Level Carbon Monoxide Protocol* (CO Protocol), a screening and a CO hot-spot analysis were conducted to determine whether the project would result in any CO hot spots. It was determined that the project would not result in any exceedances of the 1-hour or 8-hour CO standards.

The project is within a nonattainment area for federal $PM_{2.5}$ and within an attainment/ maintenance area for federal PM_{10} (particulate matter less than 2.5 microns and 10 microns, respectively, in size) standards. Therefore, per 40 Code of Federal Regulations, Part 93, analyses are required for conformity purposes. However, the EPA does not require hot-spot analyses, qualitative or quantitative, for projects that are not listed in Section 93.123(b)(1) as an air quality concern. A $PM_{2.5}$/PM_{10} hot-spot analysis was submitted to the Transportation Conformity Working Group (TCWG) for its review. On February 24, 2015, the TCWG determined that the project is not a project of air quality concern.

An Air Quality Conformity Analysis was prepared and submitted to FHWA on June 28, 2017, requesting a project level conformity determination. FHWA issued the project level air quality conformity determination letter for this project on July 24, 2017. The request letter to FHWA in this regard, as well as FHWA's determination letter is included in Appendix L of this Final Environmental Document.

2.15.3.2 Temporary Impacts

Construction Conformity

Construction activities will not last for more than 5 years at one general location, so construction-related emissions do not need to be included in regional and project-level conformity analysis (40 CFR 93.123(c)(5)).

ALTERNATIVE 1: NO BUILD ALTERNATIVE

The No Build Alternative would not result in the construction of any of the proposed improvements to the I-15/Railroad Canyon Road interchange, and therefore, would not result in temporary impacts to air quality.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

During construction, short-term degradation of air quality may occur due to the release of particulate emissions generated by excavation, grading, hauling, and other activities related to construction. Emissions from construction equipment also are anticipated and would include CO, NO_X, volatile organic compounds (VOCs), directly-emitted particulate matter ($PM_{2.5}$ and PM_{10}), and toxic air contaminants such as diesel exhaust particulate matter.

Site preparation and roadway construction would involve clearing, cut-and-fill activities, grading, and paving roadway surfaces. Construction-related effects on air quality from most roadway projects would be greatest during the site preparation phase because most engine emissions are associated with the excavation, handling, and transport of soils to and from the site. If not properly controlled, these activities would temporarily generate PM_{10}, $PM_{2.5}$, CO, SO_2, NO_X, and VOCs. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site would deposit mud on local streets, which could be an additional source of airborne dust after drying. PM_{10} emissions would vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. PM_{10} emissions would depend on soil moisture, the silt content of soil, wind speed, and the amount of equipment operating at the time. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site.

Construction activities for large development projects are estimated by the United States Environmental Protection Agency (U.S. EPA) to add 1.2 tons of fugitive dust per acre of soil disturbed per month of activity. If water or other soil stabilizers are used to control dust, the emissions can be reduced by up to 50 percent. The Department's Standard Specifications (Section 14) on dust minimization require use of water or dust palliative compounds and will reduce potential fugitive dust emissions during construction.

In addition to dust-related PM_{10} emissions, heavy trucks and construction equipment powered by gasoline and diesel engines would generate CO, SO_2, NO_X, VOCs, and some soot particulate ($PM_{2.5}$ and PM_{10}) in exhaust emissions. If construction activities were to increase traffic congestion in the area, CO and other emissions from traffic would increase while those vehicles are delayed. These emissions would be temporary and limited to the immediate area surrounding the construction site.

SO_2 is generated by oxidation during combustion of organic sulfur compounds contained in diesel fuel. Off-road diesel fuel meeting federal standards can contain up to 5,000 ppm of sulfur, whereas on-road diesel is restricted to less than 15 ppm of sulfur. However, under California law and ARB regulations, off-road diesel fuel used in California must meet the same sulfur and additional standards as on-road diesel fuel. Accordingly, SO_2-related issues due to diesel exhaust would be minimal.

The maximum amount of construction-related emissions during a peak construction day is presented in Table 2.15.C (model data are provided in Appendix D of the *Air Quality Report* [2015]). The PM_{10} and $PM_{2.5}$ emissions assume a 50 percent control of fugitive dust as a result of watering and associated dust-control measures. The emissions presented below are based on the best information available at the time of calculations. Phase 1 of the project is anticipated to take approximately 18 months for Alternatives 2 and 3 and 12 months for Alternative 4 beginning in 2018. Phase 2 of the project is anticipated to take approximately 18 months beginning in 2032 for Alternatives 2 and 3 and 2025 for Alternative 4. Caltrans Standard Specifications for construction (Section 14-9.03 [Dust Control] and Section 14-9.02 [Air Pollution Control]) will be adhered to in order to reduce emissions generated by construction equipment. Additionally, the SCAQMD has established Rule 403 for reducing fugitive dust emissions. The best available control measures (BACM), as specified in SCAQMD Rule 403, shall be incorporated into the project commitments. With the implementation of standard construction measures (providing 50 percent effectiveness) such as frequent watering (e.g., minimum twice per day) and **Measures AQ-1** through **AQ-5**, fugitive dust and exhaust emissions from construction activities would not result in any adverse air quality impacts.

Table 2.15.C Maximum Project Construction Emissions

Project Phases	ROG	CO	NO_X	Total PM_{10}	Total $PM_{2.5}$
Alternatives 2 and 3 Phase 1					
Grubbing/Land Clearing (lbs/day)	1.9	12.1	15.9	50.7	11.1
Grading/Excavation (lbs/day)	7.5	46.3	76.5	53.6	13.7
Drainage/Utilities/Sub-Grade (lbs/day)	6.0	37.3	55.5	52.8	13.0
Paving (lbs/day)	2.5	17.6	20.2	1.2	1.1
Maximum (lbs/day)	7.5	46.3	76.5	53.6	13.7
Total (tons/construction project)	**1.1**	**7.1**	**11.0**	**9.0**	**2.2**
Alternative 4 Phase 1					
Grubbing/Land Clearing (lbs/day)	1.9	12.1	15.9	50.7	11.1
Grading/Excavation (lbs/day)	7.5	46.3	76.5	53.6	13.7
Drainage/Utilities/Sub-Grade (lbs/day)	6.4	37.5	58.5	53.1	13.2
Paving (lbs/day)	2.8	17.8	22.5	1.4	1.3
Maximum (lbs/day)	7.5	46.3	76.5	53.6	13.7
Total (tons/construction project)	**0.8**	**4.7**	**7.5**	**6.0**	**1.5**
Alternatives 2 and 3 Phase 2					
Grubbing/Land Clearing (lbs/day)	2.8	25.7	23.6	51.1	11.4
Grading/Excavation (lbs/day)	5.9	58.8	47.1	52.2	12.3
Drainage/Utilities/Sub-Grade (lbs/day)	4.1	41.8	34.4	51.6	11.8
Paving (lbs/day)	3.0	31.4	26.7	1.2	1.1
Maximum (lbs/day)	5.9	58.8	47.1	52.2	12.3
Total (tons/construction project)	**0.9**	**9.2**	**7.5**	**8.8**	**2.1**
Alternative 4 Phase 2					
Grubbing/Land Clearing (lbs/day)	2.8	25.7	23.6	51.1	11.4
Grading/Excavation (lbs/day)	5.9	58.8	47.1	52.2	12.3
Drainage/Utilities/Sub-Grade (lbs/day)	4.1	41.8	34.4	51.6	11.8
Paving (lbs/day)	3.0	31.4	26.7	1.2	1.1
Maximum (lbs/day)	5.9	58.8	47.1	52.2	12.3
Total (tons/construction project)	**0.9**	**9.2**	**7.5**	**8.8**	**2.1**

Source: *Air Quality Report* (April 2015).
CO = carbon monoxide
lbs/day = pounds per day
NO_X = oxides of nitrogen
$PM_{2.5}$ = particulate matter less than 2.5 microns in size
PM_{10} = particulate matter less than 10 microns in size
ROG = reactive organic gases

Naturally Occurring Asbestos

The project is located in Riverside County, which is not among the counties listed as containing serpentine and ultramafic rock. There are no impacts associated with naturally occurring asbestos.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

Similar to Alternative 2, construction activities associated with Alternative 3 would produce combustion emissions from various sources such as site grading, utility engines, on-site heavy-duty construction vehicles, equipment hauling materials to and from the site, and motor vehicles transporting the construction crew. Exhaust and fugitive dust emissions generated during project construction will vary daily as construction activity levels change.

Caltrans Standard Specifications for construction (Sections 10 and 18 for dust control and Section 39-3.06 for asphalt concrete plants) will be adhered to in order to reduce emissions generated by construction equipment.

With the implementation of standard construction measures (providing 50 percent effectiveness) such as frequent watering (e.g., minimum twice per day) and **Measures AQ-1** through **AQ-5**, fugitive dust and exhaust emissions from construction activities would not result in any adverse air quality impacts with implementation of Build Alternative 3.

Naturally Occurring Asbestos

The project is located in Riverside County, which is not among the counties listed as containing serpentine and ultramafic rock. There are no impacts associated with naturally occurring asbestos.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

Similar to Alternative 2, construction activities associated with Alternative 4 would produce combustion emissions from various sources such as site grading, utility engines, on-site heavy-duty construction vehicles, equipment hauling materials to and from the site, and motor vehicles transporting the construction crew. Exhaust and fugitive dust emissions generated during project construction will vary daily as construction activity levels change. Caltrans Standard Specifications for construction (Sections 10 and 18 for dust control and Section 39-3.06 for asphalt concrete plants) will be adhered to in order to reduce emissions generated by construction equipment.

With the implementation of standard construction measures (providing 50 percent effectiveness) such as frequent watering (e.g., minimum twice per day) and **Measures AQ-1** through **AQ-5**, fugitive dust and exhaust emissions from construction activities would not result in any adverse air quality impacts with implementation of Build Alternative 4.

Naturally Occurring Asbestos

The project is located in Riverside County, which is not among the counties listed as containing serpentine and ultramafic rock. There are no impacts associated with naturally occurring asbestos.

2.15.3.3 Permanent Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

The No Build Alternative would not result in any improvements to the I-15/Railroad Canyon Road interchange or the construction of the I-15/Franklin Street interchange and, therefore, would not result in permanent impacts to air quality.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

Carbon Monoxide (CO)

Prior to conducting CO impact analysis, investigation on the need for CO impact analysis was performed pursuant to the CO Protocol. As stated in the CO Protocol, the determination of project requirements should be carried out according to Section 3 of the CO Protocol and as delineated in the Requirements of New Projects flowchart identified in Figure 1 of the CO Protocol. The following provides a discussion of each step for a project requirement analysis identified in Figure 1 of the CO Protocol.

3.1.1. Is this project exempt from all emissions analyses?

NO.

Table 1 of the CO Protocol is Table 2 of Section 93.126 of 40 CFR. Section 3.1.1 is inquiring whether the project is exempt. Such projects appear in Table 1 of the CO Protocol. The Build Alternative project types do not appear in Table 1. Therefore, they are not exempt from all emissions analyses.

3.1.2. Is the project exempt from regional emissions analyses?

NO.

Table 2 of the CO Protocol is Table 3 of Section 93.127. The question is attempting to determine whether the project is listed in Table 2. Although the project is an interchange reconfiguration project, it includes additional through lanes on Railroad Canyon Road and a new interchange at Franklin Street. Therefore, it is not exempt from regional emissions analysis.

3.1.3. Is the project locally defined as regionally significant?

YES.

As noted above, the project includes additional through lanes on Railroad Canyon Road and a new interchange at Franklin Street. Therefore, the project is potentially regionally significant.

3.1.4. Is the project in a federal attainment area?

YES.

The project is located within an attainment/unclassified area for the Federal CO standard.

3.1.5. Are there a currently conforming Regional Transportation Plan (RTP) and Transportation Improvement Program (TIP)?

YES.

The 2016 RTP/SCS and the 2017 FTIP.

3.1.6. Is the project included in the regional emissions analysis supporting the currently conforming RTP and TIP?

YES.

The project is included in the SCAG 2016 RTP (Amendment No. 1 to the 2016 RTP/SCS was subsequently adopted by SCAG on April 6, 2017, and Amendment No. 2 to the RTP/SCS was adopted by SCAG on July 6, 2017) and the 2017 FTIP Amendment No. 17-03 adopted on April 6, 2017 (Project ID: RIV010206; Description: at I-15/Railroad Canyon Road interchange and NW I-15/Franklin Street interchange; widen Railroad Canyon Road undercrossing from 7 to 8 lanes (Summerhill Drive to Mission Trail), reconstruct the northbound exit/entry ramps to a hook ramp connection to Grape Street, widen the southbound entry ramp from one to two lanes, widen the shoulders at the southbound exit ramp, widen Grape Street to construct a dedicated right turn lane at the northbound hook ramp and Railroad Canyon Road , and construct ramp acceleration/deceleration lanes at Railroad Canyon Road (Phase 1); construct a new I-15/Franklin Street interchange, construct auxiliary lanes from the Franklin Street interchange to the Main Street interchange and from the Franklin Street interchange to the Railroad Canyon Road interchange, realign and reconstruct the Main Street southbound on ramp from one to two lanes, on the west side of I-15 construct an Auto Center Drive extension from existing Franklin Street to Adobe Street and on the east side of I-15 construct the Canyon Estates Drive extension from existing Franklin Street to Camino Del Norte (Phase 2).

3.1.7. Has the project design concept and/or scope changed significantly from that in the regional analysis?

NO.

The Build Alternatives are consistent with the project description in the 2016 RTP and 2017 FTIP.

3.1.9. Examine local impacts.

Section 3.1.9 of the flowchart directs the project evaluation to Section 4 (Local Analysis) of the CO Protocol. This concludes Figure 1.

Section 4 contains Figure 3 from the Local CO Analysis (Appendix A of this report). This flowchart is used to determine the type of CO analysis required for the Build Alternatives. Below is a step-by-step explanation of the flowchart. Each level cited is followed by a response, which in turn, determines the next applicable level of the flowchart for the Build Alternatives.

The flowchart begins at Level 1:

Level 1. Is the project in a CO non-attainment area?

NO.

The project site is located in an area that has demonstrated attainment with the Federal CO standard.

Level 1 (cont.). Was the area redesignated as “attainment” after the 1990 Clean Air Act?

YES.

Level 1 (cont.). Has “continued attainment” been verified with the local Air District, if appropriate?

YES.

The Basin was designated as attainment/maintenance by the EPA on June 11, 2007. (Proceed to Level 7.)

Level 7. Does the project worsen air quality?

YES.

As the project would increase traffic volumes by 5 percent or more on Grape Street under Alternatives 2 and 3 and Casino Drive under Alternative 3, it would potentially worsen air quality.

a. *The project significantly increases the percentage of vehicles operating in cold start mode. Increasing the number of vehicles operating in cold start mode by as little as 2% should be considered potentially significant.*

   The percentage of vehicles operating in cold-start mode is the same or lower for the intersections under study compared to those used for the intersection in the attainment plan. It is assumed that all vehicles in the intersection are in fully warmed-up mode. Therefore, this criterion is not met.

b. *The project significantly increases traffic volumes. Increases in traffic volumes in excess of 5% should be considered potentially significant. Increasing the traffic volume by less than 5% may still be potentially significant if there is also a reduction in average speeds.*

   Based on the *Supplemental Traffic Impact Analysis*, the project would increase traffic volume by 5 percent or more along Grape Street under Alternatives 2 and 3 and Casino Drive under Alternative 3. The 2019 and 2040 traffic volumes with and without the Build Alternatives are shown in Tables 5.2 and 5.3, respectively. Therefore, the project would potentially worsen air quality. Table 2.15.D provides the 2019 traffic volumes with and without the Build Alternatives, and Table 2.15.E provides the 2040 traffic volumes with and without the Build Alternatives. Therefore, this criterion is met.

Table 2.15.D: 2019 Annual Average Daily Traffic Volumes (Total AADT/Truck AADT)

Roadway	Alternative 1 Total AADT/ Truck AADT	Alternative 2 Total AADT/ Truck AADT	Alternative 3 Total AADT/ Truck AADT	Alternative 4 Total AADT/ Truck AADT
Railroad Canyon Road	36,680/2,934	27,980/2,238	28,010/2,241	36,670/2,934
Franklin Street	7,590/607	7,590/607	7,590/607	7,590/607
Main Street	10,010/801	10,010/801	8,660/693	8,660/693
Grape Street	15,060/1,205	27,690/2,215	27,690/2,215	8,880/710
Casino Drive	6,970/558	6,970/558	23,520/1,882	6,940/555
Auto Center Drive	6,640/531	6,640/531	6,700/536	6,610/529
Mission Trail	14,700/1,176	14,700/1,176	11,470/918	14,700/1,176
Lakeshore	12,830/1,026	12,830/1,026	12,830/1,026	12,820/1,026
Camino Del Norte	3,590/287	3,590/287	2,720/218	2,720/218

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange* (November 2014).
AADT = annual average daily traffic

Table 2.15.E: 2040 Annual Average Daily Traffic Volumes (Total AADT/Truck AADT)

Roadway	Alternative 1 Total AADT/ Truck AADT	Alternative 2 Total AADT/ Truck AADT	Alternative 3 Total AADT/ Truck AADT	Alternative 4 Total AADT/ Truck AADT
Railroad Canyon Road	52,050/4,164	29,780/2,382	29,780/2,382	38,620/3,090
Franklin Street	10,080/806	11,380/910	11,380/910	11,380/910
Main Street	21,870/1,750	21,870/1,750	21,870/1,750	21,870/1,750
Grape Street	21,370/1,710	32,800/2,624	32,800/2,624	19,940/1,595
Casino Drive	9,890/791	8,740/699	24,310/1,945	8,740/699
Auto Center Drive	9,410/753	8,130/650	9,000/720	8,130/650
Mission Trail	20,860/1,669	19,060/1,525	17,020/1,362	19,060/1,525
Lakeshore	18,200/1,456	18,200/1,456	18,200/1,456	18,200/1,456
Camino Del Norte	15,980/1,278	15,980/1,278	15,980/1,278	15,980/1,278

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange* (November 2014).
AADT = annual average daily traffic

c. *The project worsens traffic flow. For uninterrupted roadway segments, a reduction in average speeds (within a range of 3 to 50 mph) should be regarded as worsening traffic flow. For intersection segments, a reduction in average speed or an increase in average delay should be considered as worsening traffic flow.*

As identified in Tables 2.15.F through 2.15.I, the Build Alternatives would improve the level of service (LOS) at the local intersections. Therefore, this criterion is not met.

Table 2.15.F: 2040 Intersection Levels of Service, No Build Alternative

Intersection	A.M. Peak Hour		P.M. Peak Hour	
	Delay	LOS	Delay	LOS
Avenue 6-Franklin Street/Auto Center Drive	16.5	B	119.7	F
Franklin Street/I-15 SB Ramps	6.2	A	11.1	B
Franklin Street/I-15 NB Ramps	10.6	B	16.4	C
Franklin Street/Camino Del Norte	67.4	E	88.0	F
Diamond Drive-Railroad Canyon Road/Mission Trail-Lake Shore Drive	60.1	E	104.6	F
Diamond Drive-Railroad Canyon Road/Casino Road-Auto Center Drive	337.5	F	368.0	F
Railroad Canyon Road/I-15 SB Ramps	325.4	F	431.6	F
Grape Street/I-15 NB Ramps	225.8	F	209.7	F
Railroad Canyon Road/Grape Street-Summerhill Drive	733.5	F	3,845.0	F
Main Street/I-15 SB Ramps	6,759.0	F	5,837.0	F
Main Street/I-15 NB Ramps	2,015.0	F	1,566.0	F
Main Street/Camino Del Norte	16.5	B	119.7	F

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* (November 2014).
Delay = Average control delay in seconds
I-15 = Interstate 15 LOS = level of service
NB = northbound
SB = southbound

Table 2.15.G: 2040 Intersection Levels of Service, Alternative 2

Intersection	A.M. Peak Hour		P.M. Peak Hour	
	Delay	**LOS**	**Delay**	**LOS**
Avenue 6-Franklin Street/Auto Center Drive	28.1	C	25.1	C
Franklin Street/I-15 SB Ramps	10.1	B	14.1	B
Franklin Street/I-15 NB Ramps	11.3	B	9.4	A
Franklin Street/Camino Del Norte	4.9	A	7.3	A
Diamond Drive-Railroad Canyon Road/Mission Trail-Lake Shore Drive	34.8	**C**	20.6	**C**
Diamond Drive-Railroad Canyon Road/Casino Road-Auto Center Drive	19.2	**B**	18.5	**B**
Railroad Canyon Road/I-15 SB Ramps	11.3	B	15.4	B
Grape Street/I-15 NB Ramps	38.5	D	37.1	D
Railroad Canyon Road/Grape Street-Summerhill Drive	34.6	C	67.2	E
Main Street/I-15 SB Ramps	14.8	B	37.0	D
Main Street/I-15 NB Ramps	20.6	C	11.2	B
Main Street/Camino Del Norte	12.2	B	20.8	C

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* (November 2014).
Delay = Average control delay in seconds
I-15 = Interstate 15
LOS = level of service
NB = northbound
SB = southbound

Table 2.15.H: 2040 Intersection Levels of Service, Alternative 3

Intersection	A.M. Peak Hour		P.M. Peak Hour	
	Delay	**LOS**	**Delay**	**LOS**
Franklin Street-Avenue 6/Auto Center Drive	28.1	C	25.1	C
Franklin Street/I-15 SB Ramps	10.1	B	14.1	B
Franklin Street/I-15 NB Ramps	11.3	B	9.4	A
Franklin Street/Camino Del Norte-Canyon Estates Drive	4.9	A	7.3	A
Diamond Drive-Railroad Canyon Road/Mission Trail-Lake Shore Drive	15.0	B	*26.7*	**C**
Diamond Drive-Railroad Canyon Road/Casino Road-Auto Center Drive	15.4	B	17.1	**B**
Railroad Canyon Road/I-15 SB Ramps	9.5	A	25.6	**C**
Railroad Canyon Road/I-15 NB Ramps	15.7	B	18.3	B
Railroad Canyon Road/Grape Street-Summerhill Drive	35.0	C	60.4	E
Main Street/I-15 SB Ramps	14.8	B	37.0	D
Main Street/I-15 NB Ramps	20.6	C	11.2	B
Main Street/Camino Del Norte	12.2	B	20.8	C

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* (November 2014).
Delay = Average control delay in seconds
I-15 = Interstate 15
LOS = level of service
NB = northbound
SB = southbound

Table 2.15.I: 2040 Intersection Levels of Service, Alternative 4

Intersection	A.M. Peak Hour		P.M. Peak Hour	
	Delay	**LOS**	**Delay**	**LOS**
Franklin Street-Avenue 6/Auto Center Drive	28.1	C	25.1	C
Franklin Street/I-15 SB Ramps	10.1	B	14.1	B
Franklin Street/I-15 NB Ramps	11.3	B	9.4	A
Franklin Street/Camino Del Norte	4.9	A	7.3	A
Diamond Drive-Railroad Canyon Road/Mission Trail-Lake Shore Drive	11.2	B	22.1	**C**
Diamond Drive-Railroad Canyon Road/Casino Road-Auto Center Drive	7.9	A	12.8	**B**
Railroad Canyon Road/I-15 SB Ramps	10.7	B	27.6	**C**
Railroad Canyon Road/I-15 NB Ramps	8.6	A	8.4	A
Railroad Canyon Road/Grape Street-Summerhill Drive	12.7	B	23.8	C
Main Street/I-15 SB Ramps	14.8	B	37.0	D
Main Street/I-15 NB Ramps	20.6	C	11.2	B
Main Street/Camino Del Norte	12.2	B	20.8	C

Source: *Supplemental Traffic Impact Analysis-Interstate Route 15 (I-15) at Railroad Canyon Interchange,* (November 2014).
Delay = Average control delay in seconds
I-15 = Interstate 15
LOS = level of service
NB = northbound
SB = southbound

Level 7 (cont.). Is the project suspected of resulting in higher CO concentrations than those existing within the region at the time of attainment demonstration?

NO.

Four intersections were evaluated in the 1997 CO Attainment Demonstration: Wilshire Boulevard at Veteran Avenue, Sunset Boulevard at Highland Avenue, La Cienega Boulevard at Century Boulevard, and Long Beach Boulevard at Imperial Highway. The CO concentrations at the intersections under study will be lower than those reported for the maximum of the intersections analyzed in the CO attainment plan because all of the following conditions, listed in Section 4.7.2 of the CO Protocol, are satisfied:

- The receptor locations at the intersections under study are at the same distance or farther from the traveled roadway than the receptor locations used in the intersections in the attainment plan. The attainment plan evaluates the CO concentrations at a distance of 10 ft from the edge of the roadways. The CO Protocol does not permit the modeling of receptor locations closer than this distance.
- The project intersection traffic volumes and geometries are not substantially different from those included in the attainment plan. Also, the intersections under study have less total traffic and the same number of lanes or fewer than the intersections in the attainment plan.
- The assumed meteorology for the intersections under study is the same as the assumed meteorology for the intersections in the attainment plan. Both use the worst-case scenario meteorology settings in the CALINE4 and/or CAL3QHC models.
- As identified in Table 2.15.J, the intersection total and turn lane volumes are lower for the intersections under study than those assumed for the intersection in the attainment plan.

Table 2.15.J Total Intersection Traffic Volume Comparisons

Attainment Plan Maximum Volumes							
Intersection 1: Wilshire Boulevard/ Veteran Avenue		Intersection 2: Sunset Boulevard/ Highland Avenue		Intersection 3: La Cienega Boulevard/ Century Boulevard		Intersection 4: Long Beach Boulevard/ Imperial Highway	
AM	PM	AM	PM	AM	PM	AM	PM
8,062	7,719	6,614	7,374	6,635	8,674	4,212	5,514

Condition	Intersection 1: Lakeshore Drive-Mission Trail/ Diamond Drive		Intersection 2: Auto Center Drive-Casino Drive/ Diamond Drive		Intersection 3: Summerhill Drive-Grape Street / Railroad Canyon Road	
	AM	PM	AM	PM	AM	PM
2019 Alternative 1 (No Build)	1,649	2,337	1,875	2,331	2,689	4,687
2019 Alternative 2	1,649	2,337	1,875	2,331	4,143	4,833
2019 Alternative 3	1,363	2,014	2,749	3,475	4,033	4,836
2019 Alternative 4	1,649	2,337	1,875	2,328	2,689	4,686
2040 Alternative 1 (No Build)	2,342	3,315	2,661	3,307	5,630	6,652
2040 Alternative 2	2,263	3,135	2,166	2,761	4,952	5,749
2040 Alternative 3	1,891	2,931	3,075	2,991	4,952	5,749
2040 Alternative 4	2,263	3,135	2,166	2,761	4,810	5,547

Source: *Air Quality Report* (April 2015).

- The percentages of vehicles operating in cold-start mode are the same or lower for the intersections under study compared to those used for the intersections in the attainment plan. It is assumed that all vehicles in the intersections are operating in fully warmed-up mode.
- The percentage of heavy-duty gas trucks in the intersections under study is the same or lower than the percentages used for the intersections in the attainment plan analysis. It is assumed that the traffic distribution at the intersection under study do not vary from the EMFAC standards.
- Average delay and queue length for each approach are the same or less for the intersection under study compared to those found in the intersections in the attainment plan. The predicted LOS for the intersections under study range from A to F. The LOS for the intersections in the attainment plan are not listed; however, the traffic counts and intersection geometries correspond to LOS F for three out of four intersections in the attainment plan.
- The background concentration in the area of the intersections under study is 1.9 ppm for 1 hour and 0.6 ppm for 8 hours, which is lower than the background concentrations for the intersection in the attainment plan. These varied from 5.3 to 12.2 ppm for 1 hour and 3.7 to 9.9 ppm for 8 hours.

The project is not expected to result in any concentrations exceeding the 1-hour or 8-hour CO standards. Therefore, a detailed CALINE4 CO hot-spot analysis was not required.

Particulate Matter (PM_{10} and $PM_{2.5}$)

The project is within a nonattainment area for the Federal $PM_{2.5}$ and within an attainment/maintenance area for Federal PM_{10} standards. The project does not qualify as a POAQC for the following reasons:

i) The project is not a new or expanded highway project. The project is an interchange reconstruction project (Railroad Canyon Road) and a new interchange construction project (Franklin Street) that does not increase the capacity of I-15. This type of project improves freeway interchange operations by reducing traffic congestion and improving merge operations. Based on the *Supplemental Traffic Impact Analysis* (November 2014), the Build Alternatives would increase the capacity of Railroad Canyon Road and Franklin Street. However, the traffic volumes would not exceed the 125,000 average daily trips threshold for a POAQC. In addition, the total truck percentages along Railroad Canyon Road and Franklin Street would not exceed the 8 percent threshold, and the total truck annual average daily traffic (AADT) would not exceed the 10,000-vehicle threshold for POAQC. The future traffic volumes along Railroad Canyon Road, Franklin Street, and other local roadways are provided in Section 2.7.

ii) The project does not affect intersections that operate at LOS D, E, or F with a significant number of diesel vehicles. Based on the *Supplemental Traffic Impact Analysis* (November 2014) the Build Alternatives would reduce the delay and improve the LOS at intersections within the project vicinity. The LOS conditions in the project vicinity with and without the Build Alternatives are provided in Section 2.7.

iii) The project does not include the construction of a new bus or rail terminal.

iv) The project does not expand an existing bus or rail terminal.

v) The project is not in or affecting locations, areas, or categories of sites that are identified in the $PM_{2.5}$ and PM_{10} applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.

As discussed above, the project-level particulate matter hot-spot analysis was presented to SCAG's TCWG for discussion and review on February 24, 2015..

The Build Alternatives meet the CAA requirements and 40 CFR 93.116 without any PM_{10} or $PM_{2.5}$ hot-spot analysis. The Build Alternatives would not create a new, or worsen an existing, PM_{10} or $PM_{2.5}$ violation.

Mobile-Source Air Toxics

In addition to the criteria air pollutants for which there are NAAQS, the EPA also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners), and stationary sources (e.g., factories or refineries). Mobile-Source Air Toxics (MSATs) are a subset of the 188 air toxics defined by the CAA. The MSATs are compounds emitted from highway vehicles and non-road equipment. Some toxic compounds are present in fuel and are emitted into the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline.

Air toxics analysis is a continuing area of research. While much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. In particular, the tools and techniques for assessing project-specific health outcomes as a result of lifetime MSAT exposure remain limited. These limitations impede the ability to evaluate how the potential health risks posed by MSAT exposure should be factored into project-level decision-making within the context of the National Environmental Policy Act (NEPA).

In December 2012, the FHWA issued guidance to advise FHWA division offices as to when and how to analyze MSATs in the NEPA process for highways. This document is an update to the guidance released in February 2006 and September 2009. The guidance is described as interim because MSAT science is still evolving. As the science progresses, FHWA will update the guidance. This analysis follows the FHWA guidance.

Information that is Unavailable or Incomplete

In FHWA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in mobile source air toxic (MSAT) emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

The EPA is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the Clean Air Act and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSATs. The EPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain the Integrated Risk Information System (IRIS), which is "a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects" (EPA, available at https://www.epa.gov/iris/). Each report contains assessments of non-cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSATs, including the Health Effects Institute (HEI). A number of HEI studies are summarized in Appendix D of FHWA's *Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents* (October 12, 2016). Among the adverse health effects linked to MSAT compounds at high exposures are: cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations (HEI Special Report 16, available at https://www.healtheffects.org/publication/mobile-source-air-toxics-critical-reviewliterature-exposure-and-health-effects) or in the future as vehicle emissions substantially decrease.

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts – each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of project alternatives. These difficulties are magnified for lifetime (i.e., 70 year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable.

It is particularly difficult to reliably forecast 70-year lifetime MSAT concentrations and exposure near roadways; to determine the portion of time that people are actually exposed at a specific location; and to establish the extent attributable to a proposed action, especially given that some of the information needed is unavailable.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSATs, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI (Special Report 16, available at https://www.healtheffects.org/publication/mobile-source-air-toxicscritical-review-literature-exposure-and-health-effects). As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. The EPA states that with respect to diesel engine exhaust, "[t]he absence of adequate data to develop a sufficiently confident dose-response relationship from the epidemiologic studies has prevented the estimation of inhalation carcinogenic risk (available at https://www.epa.gov/iris)."

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by the EPA as provided by the Clean Air Act to determine whether more stringent controls are required in order to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires EPA to determine an "acceptable" level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld EPA's approach to addressing risk in its two-step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than deemed acceptable (available at https://www.cadc.uscourts.gov/internet/opinions.nsf/284E23FFE079CD5985257800005 0C9DA/$file/07-1053-1120274.pdf).

Because of the limitations in the methodologies for forecasting health impacts described, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against project benefits, such as reducing traffic congestion, accident rates, and fatalities, plus improved access for emergency response, that are better suited for quantitative analysis

For each alternative in this IS/EA (Alternatives 1, 2, 3, and 4), the amount of mobile source air toxics (MSAT) emitted would be proportional to the vehicle miles traveled, or VMT, assuming that other variables such as fleet mix are the same for each alternative. Because the VMT estimated for the No Build Alternative (Alternative 1) is higher than for any of the Build Alternatives (Alternatives 2, 3, and 4), higher levels of MSAT are not expected from any of the Build Alternatives compared to the No Build. Refer to Table 2.15.K. In addition, because the estimated VMT under each of the Build Alternatives are nearly the same, varying by less than 2.9 percent, it is expected there would be no appreciable difference in overall MSAT emissions among the various alternatives. Also, regardless of the alternative chosen, emissions will likely be lower than present levels in the design year as a result of the EPA's national control programs that are projected to reduce annual MSAT emissions by over 90 percent from 2010 to 2050 (*Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents*, FHWA, October 12, 2016). Local conditions may differ from these national projections in terms of fleet mix and turnover, VMT growth rates, and local control measures. However, the magnitude of the EPA-projected reductions is so great (even after accounting for VMT growth) that MSAT emissions in the study area are likely to be lower in the future in virtually all locations.

Table 2.15.K Annual Vehicle Miles Traveled, by Alternative[1]

Alternative	Annual Vehicle Miles Traveled
Existing/Baseline 2013	180,207,163
Open to Traffic 2019 (Phase 1)	
No Build (Alternative 1)	208,008,803
Build Alternative 2	206,722,474
Build Alternative 3	202,061,917
Build Alternative 4	208,008,803
20-Year Horizon/Design-Year 2040	
No Build (Alternative 1)	302,687,406
Build Alternative 2	300,178,943
Build Alternative 3	298,216,658
Build Alternative 4	300,178,943

[1] Annual vehicle miles traveled (VMT) values derived from Daily VMT values multiplied by 347, per ARB methodology (ARB 2008).
ARB = California Air Resources Board
VMT = vehicle miles traveled

Under each alternative there may be localized areas where VMT would increase, and other areas where VMT would decrease. Therefore, it is possible that localized increases and decreases in MSAT emissions may occur. The localized increases in MSAT emissions would likely be most pronounced along the new roadway sections that would be built at the new Franklin Street overcrossing, under all Build Alternatives. However, even if these increases do occur, they too will be substantially reduced in the future due to implementation of EPA's vehicle and fuel regulations.

In sum, under all Build Alternatives in the design year, it is expected there would be reduced MSAT emissions in the immediate area of the project, relative to the No Build Alternative, due to the reduced VMT associated with more direct routing, and due to EPA's MSAT reduction programs.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

Impacts identified for Alternative 3 would be the same as those identified for Alternative 2. Historical air quality data indicate that existing CO levels for the project area and the general vicinity do not exceed either the State or Federal ambient air quality standards. The project under this alternative would help to improve traffic flow and reduce congestion on roadway links in the project vicinity. The project is located in an attainment/maintenance area for Federal CO standards. Using the Caltrans CO Protocol, a screening and a CO hot-spot analysis were conducted to determine whether the project would result in any CO hot spots. It was determined that the project would not result in any exceedances of the 1-hour or 8-hour CO standards.

The project is within a nonattainment area for Federal standards for particulate matter less than 2.5 microns and within an attainment/maintenance area for 10 microns in size ($PM_{2.5}$ and PM_{10}, respectively). Therefore, per 40 CFR, Part 93, analyses are required for conformity purposes. However, the EPA does not require hot-spot analyses, qualitative or quantitative, for projects that are not listed in Section 93.123(b)(1) as an air quality concern. Therefore, a $PM_{2.5}$/PM_{10} hot-spot analysis was submitted to the TCWG for its review. On February 24, 2015, the TCWG determined that the project is not a Projects of Air Quality Concern (POAQC).

Because the proposed interchange reconfiguration and new interchange project does not generate new regional vehicular trips, no new regional vehicular emissions would occur. The project may have a beneficial effect in helping to reduce congestion on roadway links in the project vicinity.

The project is required to include an analysis of MSAT as part of the NEPA process for highways. It is expected that there would be similar or lower MSAT emissions in the study area under this alternative relative to the No Build Alternative in the design year (2040) due to the improvement in the LOS and reduction of the delay at the project intersections.

As identified for Alternative 2, Alterative 3 would not require any operational avoidance, minimization, and/or mitigation measures as this alternative would not result in potential operational air quality impacts.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

Impacts identified for Alternative 4 would be the same as those identified for Alternative 2. Historical air quality data indicates that existing CO levels for the project area and the general vicinity do not exceed either the State or Federal ambient air quality standards. The project under this alternative would help to improve traffic flow and reduce congestion on roadway links in the project vicinity. The project is located in an attainment/maintenance area for Federal CO standards. Using Caltrans CO Protocol, a screening and a CO hot-spot analysis were conducted to determine whether the project would result in any CO hot spots. It was determined that the project would not result in any exceedances of the 1-hour or 8-hour CO standards.

The project is within a nonattainment area for Federal standards for particulate matter less than 2.5 microns and within an attainment/maintenance area for 10 microns in size ($PM_{2.5}$ and PM_{10}, respectively). Therefore, per 40 CFR, Part 93, analyses are required for conformity purposes. However, the EPA does not require hot-spot analyses, qualitative or quantitative, for projects that are not listed in Section 93.123(b)(1) as an air quality concern. Therefore, a $PM_{2.5}$/PM_{10} hot-spot analysis was submitted to the TCWG for its review. On February 24, 2015, the TCWG determined that the project is not a POAQC.

Because the proposed interchange reconfiguration and new interchange project does not generate new regional vehicular trips, no new regional vehicular emissions would occur. The project may have a beneficial effect in helping to reduce congestion on roadway links in the project vicinity.

The project was determined to be in regional conformity. The project is listed in the 2016 RTP/SCS Amendment No. 1, which was found to conform to the SIP by the SCAG on April 12, 2017, and the FHWA and the FTA made a regional conformity finding on May 12, 2017. The project is also in the 2017 FTIP, which was found to be conforming by the FHWA/FTA on July 24, 2017.

The project is required to include an analysis of MSAT as part of the NEPA process for highways. It is expected that there would be similar or lower MSAT emissions in the study area under this alternative relative to the No Build Alternative in the design year (2040) due to the improvement in the LOS and reduction of the delay at the project intersections.

As identified for Alternative 2, Alternative 4 would not require any operational avoidance, minimization, and/or mitigation measures as this alternative would not result in potential operational air quality impacts.

CEQA DISCUSSION

Would the project:

III. a) Conflict with or obstruct implementation of the applicable air quality plan?

No Impact. The project is located within the South Coast Air Basin (Basin) and is within the jurisdiction of the South Coast Air Quality Management District (SCAQMD). The Basin is bounded by the Pacific Ocean to the west and the San Gabriel, San Bernardino, and San Jacinto Mountains to the north and east. It includes all of Orange County, the non-Antelope Valley portions of Los Angeles County, and the non-desert portions of Riverside and San Bernardino Counties.

The current regional AQMP is the *2012 Final AQMP*[1] adopted by the SCAQMD on December 7, 2012. The *2012 Final AQMP* proposes attainment demonstration of the Federal particulate matter less than 2.5 microns in size ($PM_{2.5}$) standards through a more focused control of sulfur oxides (SO_X), directly-emitted $PM_{2.5}$, and nitrogen oxides ($NO_{X)}$ supplemented with reactive organic gases (ROG) by 2015. The 8-hour ozone control strategy builds upon the $PM_{2.5}$ strategy, augmented with additional NO_X and ROG reductions to meet the standard by 2024 assuming a bump-up[2] is obtained. The Basin is currently a federal and state non-attainment area for PM_{10}, $PM_{2.5}$, and ozone.

The 2012 AQMP was based on assumptions provided by the California Air Resources Board (ARB) and the Southern California Association of Governments (SCAG) to model for the most recent motor vehicle and demographic data, respectively. The air quality levels projected in the 2012 AQMP assume that development associated with general plans, specific plans, residential projects, and wastewater projects will be constructed in accordance with population growth projections identified by SCAG in its 2012 Regional Transportation Plan (RTP.) The 2012 AQMP has also assumed that these development projects will implement strategies to reduce construction and operational emissions.

The project would not conflict with or obstruct implementation of any applicable air quality plan. No impact related to this issue would occur; therefore, no mitigation is required.

III. b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?

Less Than Significant Impact. The project site is located in a federal and State nonattainment area for ozone (O_3) and particulate matter $PM_{2.5}$ and within a nonattainment area for State PM_{10} standards and attainment/maintenance area for federal PM_{10} standards. Emissions from construction activities typically include fugitive dust from grading and other surface disturbance activities (e.g., demolition, trenching, dirt hauling, movement of construction support vehicles across the project area, and exhaust emissions from construction equipment). During construction, disturbed and exposed soil areas, stockpiles, etc., on the project area could potentially be subject to wind erosion as well as dry weather conditions. Exhaust and fugitive dust emissions generated during project construction will vary daily as construction activity levels change. Therefore, the project would not create a new, or worsen an existing, PM_{10} or

---

[1] South Coast Air Quality Management District, Final 2012 AQMP, February 2013. Website: http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan (accessed February 02, 2015).

[2] A "bump-up" is a voluntary reclassification of a nonattainment area to a higher classification allowing for an extension of an attainment deadline.

$PM_{2.5}$ violation. Furthermore, maximum daily construction and operational emissions of criteria pollutants do not exceed daily SCAQMD significance thresholds for each criteria pollutant. With the implementation of standard construction measures (providing 50 percent effectiveness) such as frequent watering (e.g., minimum twice per day) and **Minimization Measures AQ-1** through **AQ-5**, presented below in Section 2.15.4, fugitive dust and exhaust emissions from construction activities would be minimized. No significant impacts related to a violation of an air quality standard or a substantial contribution to and existing or proposed air quality violation would occur with project implementation.

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

Less Than Significant Impact. Please refer to CEQA Air Quality Response b) above.

III. d) Expose sensitive receptors to substantial pollutant concentrations?

Less Than Significant Impact. The project would result in temporary, short-term construction-related increases in pollutant concentrations specifically associated with fugitive dust and construction equipment emissions. As identified above, maximum daily construction and operational emissions of criteria pollutants do not exceed daily SCAQMD significance thresholds for each criteria pollutant. Implementation of SCAQMD Rules and Regulations in addition to implementation of **Minimization Measures AQ-1** through **AQ-5**, presented below in Section 2.15.4, would minimize potential short-term adverse project-related air quality impacts to sensitive receptors. Impacts are less than significant.

III. e) Create objectionable odors affecting a substantial number of people?

Less Than Significant Impact. Land uses generally associated with odor complaints include agricultural uses, wastewater treatment plants, food processing plants, chemical plants, composting operations, refineries, landfills, and dairies. The project does not contain land uses typically associated with emitting objectionable odors. Potential odor sources associated with the project may result from equipment exhaust and asphalt paving during construction of the project. These types of odors are temporary and would cease upon completion of construction. The project is required to comply with SCAQMD Rule 402 to prevent occurrences of public nuisances associated with odor. Therefore, odors associated with the project would be less than significant and no mitigation is required.

2.15.4 Avoidance, Minimization, and/or Mitigation Measures

The following SCAQMD and Caltrans standard measures are required to minimize potential project impacts to air quality during construction:

Minimization Measures

AQ-1 During clearing, grading, earthmoving, or excavation operations, excessive fugitive dust emissions will be controlled by regular watering or other dust preventive measures using the following procedures, as specified in the South Coast Air Quality Management District (SCAQMD) Rule 403. All material excavated or graded will be sufficiently watered to prevent excessive amounts of dust. Watering will occur at least twice daily with complete coverage, preferably in the late morning and after work is done for the day. All material transported on site or off site will be either sufficiently watered or securely covered to prevent excessive amounts of dust. The area disturbed by clearing, grading, earthmoving, or excavation operations will be minimized so as to prevent excessive amounts of dust. These control techniques will be indicated in project specifications. Visible dust beyond the property line emanating from the project will be prevented to the maximum extent feasible.

AQ-2 Project grading plans will show the duration of construction. Ozone precursor emissions from construction equipment vehicles will be controlled by maintaining equipment engines in good condition and in proper tune per manufacturers' specifications.

AQ-3 All trucks that are to haul excavated or graded material on site will comply with State Vehicle Code Section 23114, with special attention to Sections 23114(b)(F), (e)(2), and (e)(4), as amended, regarding the prevention of such material spilling onto public streets and roads.

AQ-4 The contractor shall comply with air-pollution control rules, regulations, ordinances, and statues that apply to work performed under the Contract, including those provided in Government Code Section 11017 (Pub Contract Code Section 10231) (Caltrans Standard Specifications for Construction Section 14.9-02).

AQ-5 All construction vehicles both on- and off-site shall be prohibited from idling in excess of 10 minutes.

This page intentionally left blank

2.16 Noise

2.16.1 Regulatory Setting

The National Environmental Policy Act (NEPA) of 1969 and the California Environmental Quality Act (CEQA) provide the broad basis for analyzing and abating highway traffic noise effects. The intent of these laws is to promote the general welfare and to foster a healthy environment. The requirements for noise analysis and consideration of noise abatement and/or mitigation, however, differ between NEPA and CEQA.

2.16.1.1 California Environmental Quality Act

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 project unless such measures are not feasible. The CEQA noise analysis is included at the end of this section.

2.16.1.2 National Environmental Policy Act and 23 CFR 772

For highway transportation projects with FHWA (and Caltrans, as assigned) involvement, the Federal-Aid Highway Act of 1970 and the associated implementing regulations (23 Code of Federal Regulations [CFR] 772) govern the analysis and abatement of traffic noise impacts. The regulations require that potential noise impacts in areas of frequent human use be identified during the planning and design of a highway project. The regulations contain noise abatement criteria (NAC) that are used to determine when a noise impact would occur. The NAC differ depending on the type of land use under analysis. For example, the NAC for residences (67 A-weighted decibels [dBA]) is lower than the NAC for commercial areas (72 dBA). Table 2.16.A lists the NAC for use in the NEPA 23 CFR 772 analysis.

Table 2.16.B lists the noise levels of common activities to enable readers to compare the actual and predicted highway noise-levels discussed in this section with common activities.

According to Caltrans Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects (Traffic Noise Analysis Protocol, May 2011), a noise impact occurs when the predicted future noise level with the project substantially exceeds the existing noise level (defined as a 12 dBA or more increase) or when the future noise level with the project approaches or exceeds the NAC. Approaching the NAC is defined as coming within 1 dBA of the NAC.

If it is determined that the project will have noise impacts, then potential abatement measures must be considered. Noise abatement measures that are determined to be reasonable and feasible at the time of final design are incorporated into the project plans and specifications. This document discusses noise abatement measures that would likely be incorporated in the project.

Caltrans Traffic Noise Analysis Protocol sets forth the criteria for determining when an abatement measure is reasonable and feasible. Feasibility of noise abatement is basically an engineering concern. A minimum 5 dBA reduction in the future noise level must be achieved for an abatement measure to be considered feasible. Other considerations include topography, access requirements, other noise sources and safety considerations.

Table 2.16.A: Activity Categories and Noise Abatement Criteria

Activity Category	NAC, Hourly A-Weighted Noise Level, dBA $L_{eq}(h)$[1]	Description of Activities
A	57 Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose
B[2]	67 Exterior	Residential
C[2]	67 Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, daycare centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52 Interior	Auditoriums, daycare centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72 Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A–D or F.
F	--	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, railyards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	--	Undeveloped lands that are not permitted.

Source: Federal Highway Administration 23 CFR 772.
[1] The $L_{eq}(h)$ activity criteria values are for impact determination only and are not design standards for noise abatement measures. All values are in dBA.
[2] Includes undeveloped lands permitted for this activity category.
dBA = A-weighted decibels
$L_{eq}(h)$ = equivalent continuous sound level per hour
NAC = Noise Abatement Criteria

Table 2.16.B: Noise Levels of Common Activities

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
	110	Rock Band
Jet Fly-over at 300m (1000 ft)		
	100	
Gas Lawn Mower at 1 m (3 ft)		
	90	
Diesel Truck at 15 m (50 ft), at 80 km (50 mph)		Food Blender at 1 m (3 ft)
	80	Garbage Disposal at 1 m (3 ft)
Noisy Urban Area, Daytime		
Gas Lawn Mower, 30 m (100 ft)	70	Vacuum Cleaner at 3 m (10 ft)
Commercial Area		Normal Speech at 1 m (3 ft)
Heavy Traffic at 90 m (300 ft)	60	
		Large Business Office
Quiet Urban Daytime	50	Dishwasher Next Room
Quiet Urban Nighttime	40	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime		
	30	Library
Quiet Rural Nighttime		Bedroom at Night, Concert Hall (Background)
	20	Broadcast/Recording Studio
	10	
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

Source: California Department of Transportation, *Technical Noise Supplement* (September 2013).
dBA = A-weighted decibels
ft = feet
mph = miles per hour

The reasonableness determination is basically a cost-benefit analysis. Factors used in determining whether a proposed noise abatement measure is reasonable include: the construction cost of the barrier, the noise reduction design goal (a noise level reduction of 7 dBA or more at one or more benefited receptors), and the viewpoints of benefitted receptors (including property owners and residents of the benefited receptors).

2.16.2 Affected Environment

This section is based on the following documents prepared for the project:

- *Noise Study Report* (NSR) (August 2015)
- *Noise Abatement Decision Report* (NADR) (December 2015)

2.16.2.1 Surrounding Land Use and Sensitive Receptors

Existing land uses in the project area include single-family and multifamily residences, playgrounds, hotels, churches, a school, a landfill, restaurants, medical facilities, a casino, vacant land, office uses, and commercial uses.

Short-term monitoring locations were selected to represent noise-sensitive land uses within the project area. Two long-term monitoring sites were selected to capture the diurnal traffic noise level pattern and to identify the peak traffic noise hour in the project area. Some of the 187 receptors were not evaluated under all alternatives because they are either located beyond the southern limits of the project or they would be fully acquired by the project. A total of 169, 181 and 164 receptors under Alternatives 2, 3, and 4 respectively, were modeled to represent noise-sensitive land uses in the project area. These modeled receptors and short-term and long-term monitoring locations are illustrated in Figure 2.16.1 were selected to represent noise-sensitive land uses in the project vicinity. Receptors, as illustrated, are those locations at which noise impacts were evaluated.

2.16.2.2 Existing Noise Levels

The primary source of noise in the project area is traffic on the Interstate 15 (I-15), Railroad Canyon Road and local roadways. Ambient (15-minute) noise level measurements were conducted for the NSR (August 2015) to document existing noise levels at 34 representative sensitive receptor locations in the project area. The noise monitoring locations are illustrated in previously referenced Figure 2.16.1 while Table 2.16.C identifies the existing traffic noise levels at the modeled receptor locations. The short-term noise level measurements were used to calibrate the noise model and to predict the noise levels at all modeled sensitive receptors in the project area. The existing p.m. peak-hour traffic volumes were obtained from the Supplemental Traffic Impact Analysis (November 2014) prepared for the project. As identified in Table 2.16.C, of the modeled receptor locations, 3 receptors currently approach or exceed the 67 dBA equivalent continuous sound level (L_{eq}) NAC for residential uses under the existing traffic noise condition.

2.16.3 Environmental Consequences

2.16.3.1 Temporary Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

Under the No Build Alternative, there would be no construction and no temporary project-related noise generated.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

Two types of short-term noise impacts would occur during project construction. The first type would be from construction crew commutes and the transport of construction equipment and materials to and from the project site. These activities would incrementally raise noise levels on access roads leading to the project site. The pieces of heavy equipment for grading and construction activities would be moved on site, would remain for the duration of each construction phase, and would not add to the daily traffic volume in the project vicinity. A high single-event noise exposure potential at a maximum level of 84 dBA maximum instantaneous noise level (L_{max}) from trucks passing at 50 feet (ft) would occur. However, the projected construction traffic will be minimal when compared to existing traffic volumes on I-15, Railroad Canyon Road, Franklin Street, Main Street, and other affected streets, and its associated long-term noise level change will not be perceptible. Therefore, short-term, construction-related worker commutes and equipment transport noise impacts would be less than substantial.

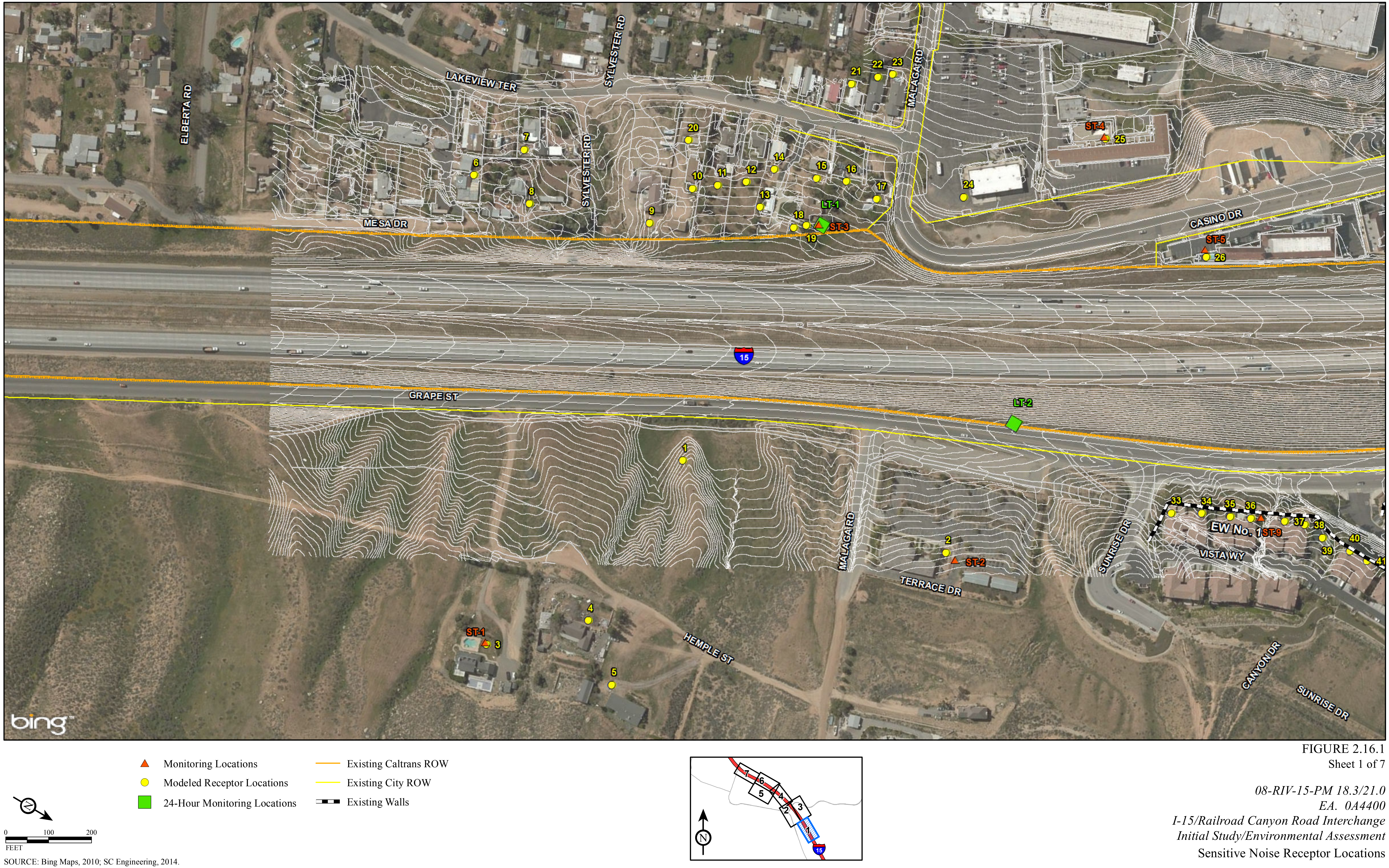


FIGURE 2.16.1
Sheet 1 of 7

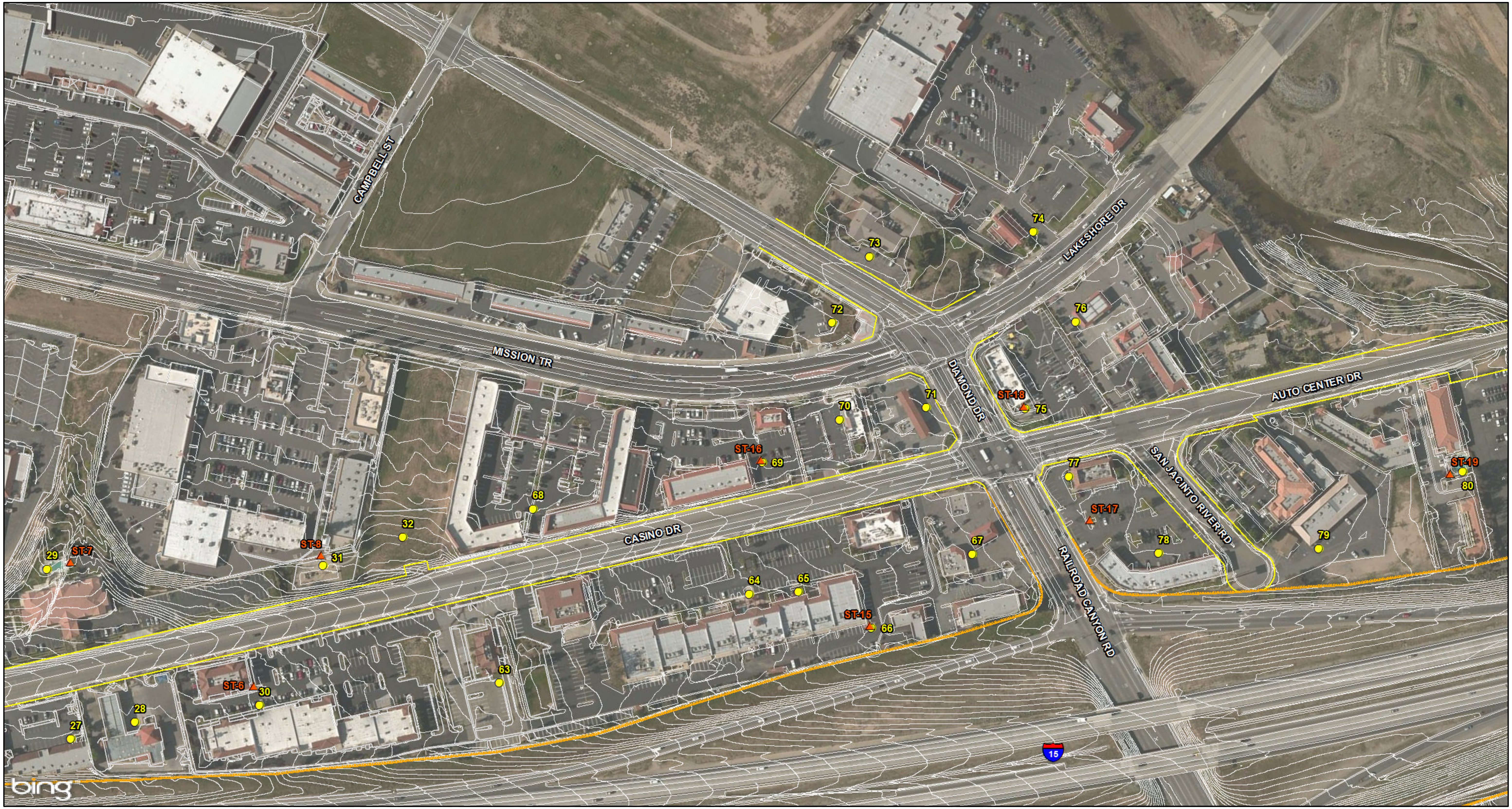
SOURCE: Bing Maps, 2010; SC Engineering, 2014.

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Sensitive Noise Receptor Locations

I:\SAE1401\Reports\IS_EA\Fig2-16-1_NoiseMonitoring.mxd (10/9/2015)

This page intentionally left blank



Monitoring Locations
Modeled Receptor Locations
24-Hour Monitoring Locations
Existing Caltrans ROW
Existing City ROW
Existing Walls

0 100 200
FEET

SOURCE: Bing Maps, 2010; SC Engineering, 2014.

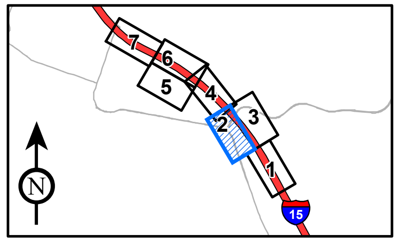


FIGURE 2.16.1
Sheet 2 of 7

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment
Sensitive Noise Receptor Locations

I:\SAE1401\Reports\IS_EA\Fig2-16-1_NoiseMonitoring.mxd (10/9/2015)

This page intentionally left blank

Monitoring Locations
Modeled Receptor Locations
24-Hour Monitoring Locations
Existing Caltrans ROW
Existing City ROW
Existing Walls

0 100 200
FEET

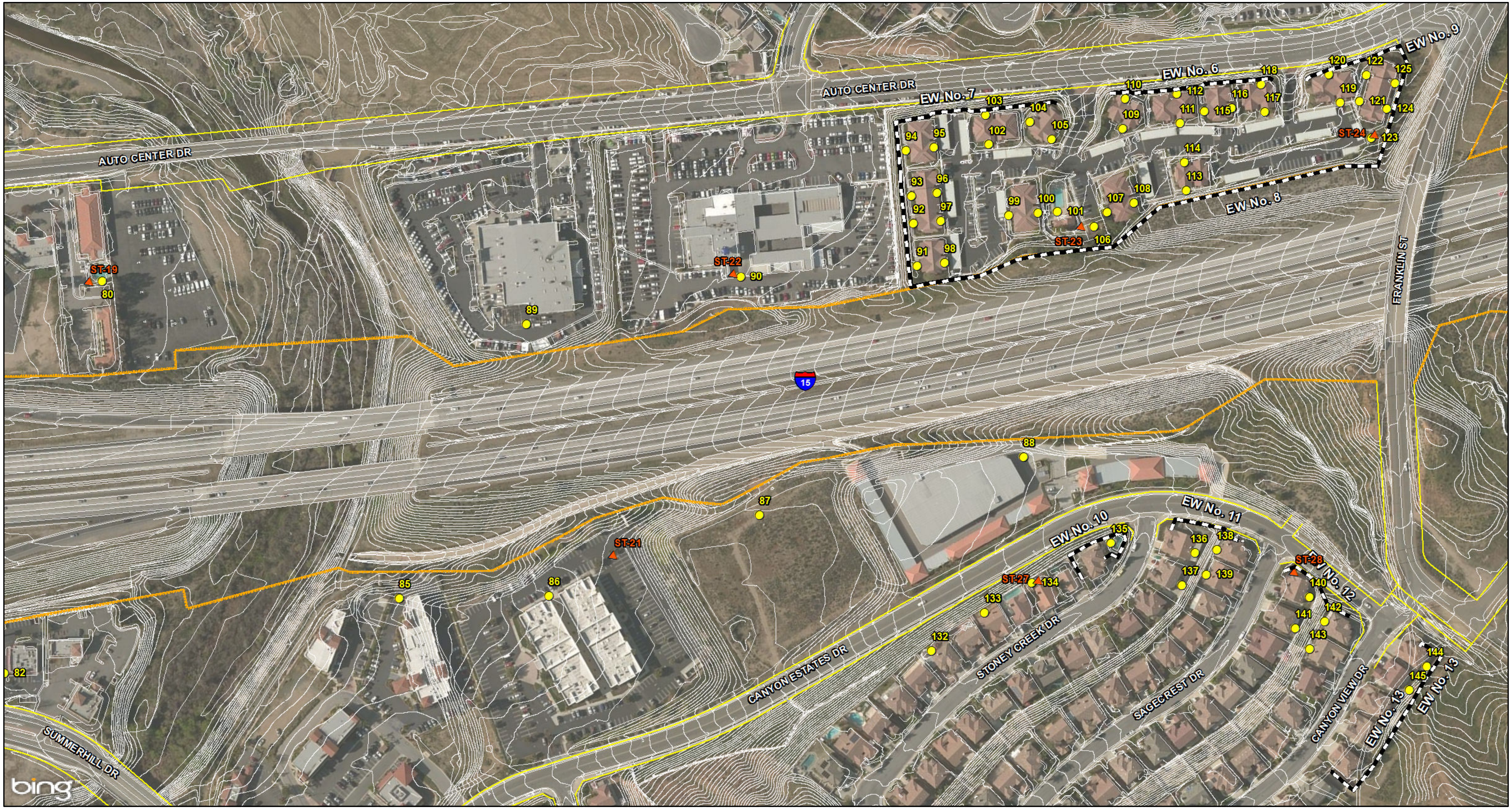
SOURCE: Bing Maps, 2010; SC Engineering, 2014.

I:\SAE1401\Reports\IS_EA\Fig2-16-1_NoiseMonitoring.mxd (10/9/2015)

FIGURE 2.16.1
Sheet 3 of 7

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment
Sensitive Noise Receptor Locations

This page intentionally left blank



- ▲ Monitoring Locations
- ● Modeled Receptor Locations
- ■ 24-Hour Monitoring Locations
- Existing Caltrans ROW
- Existing City ROW
- Existing Walls

0 100 200
FEET

SOURCE: Bing Maps, 2010; SC Engineering, 2014.

I:\SAE1401\Reports\IS_EA\Fig2-16-1_NoiseMonitoring.mxd (10/9/2015)

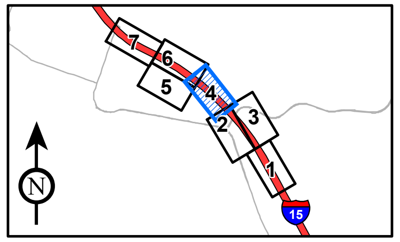


FIGURE 2.16.1

Sheet 4 of 7

08-RIV-15-PM 18.3/21.0

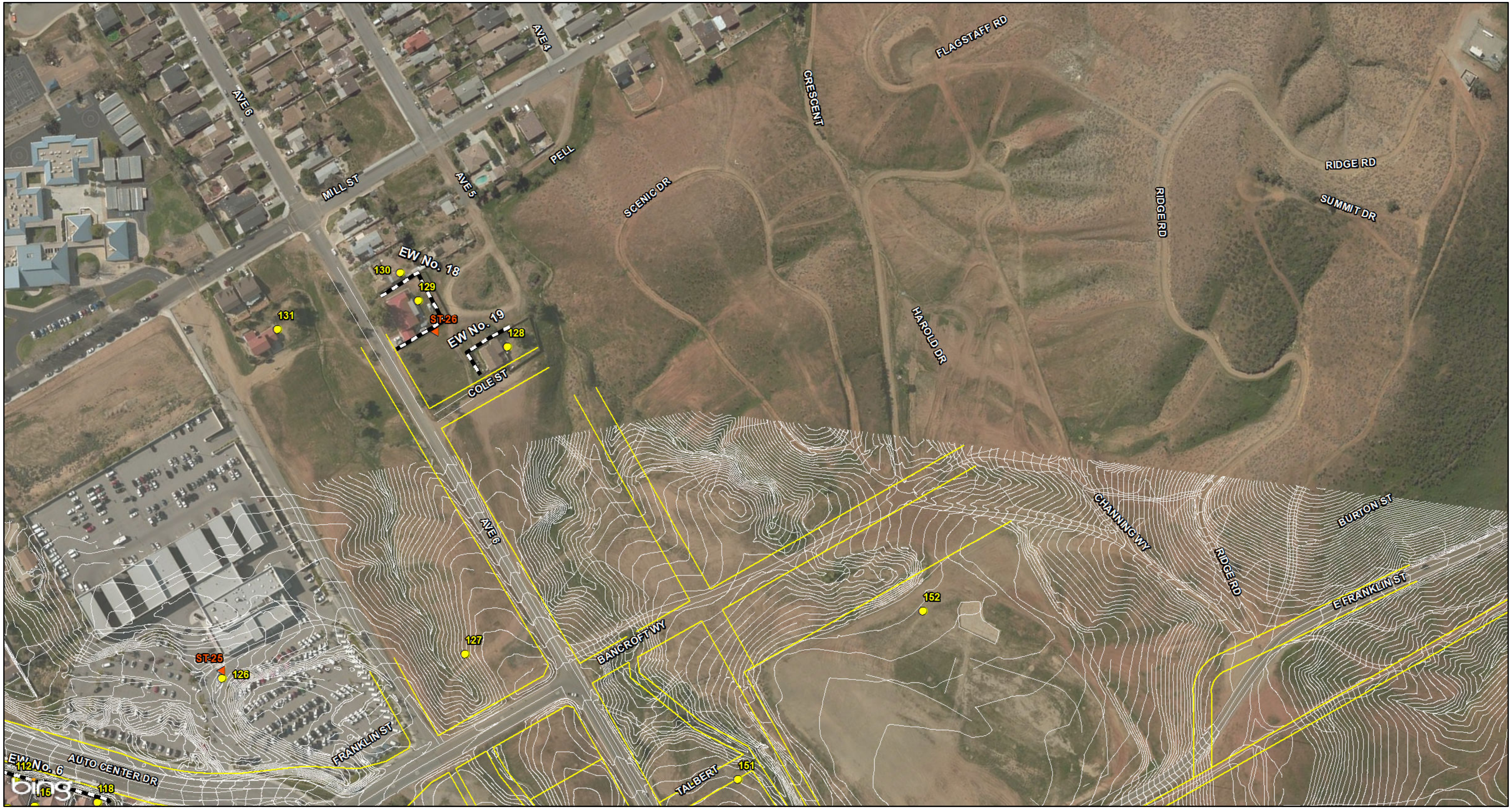
EA. 0A4400

I-15/Railroad Canyon Road Interchange

Initial Study/Environmental Assessment

Sensitive Noise Receptor Locations

This page intentionally left blank



Monitoring Locations
Modeled Receptor Locations
24-Hour Monitoring Locations
Existing Caltrans ROW
Existing City ROW
Existing Walls

0 100 200
FEET

SOURCE: Bing Maps, 2010; SC Engineering, 2014.

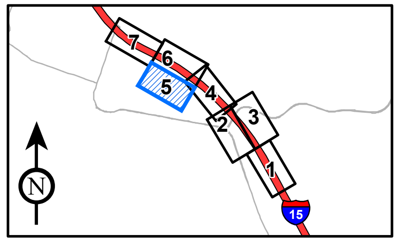
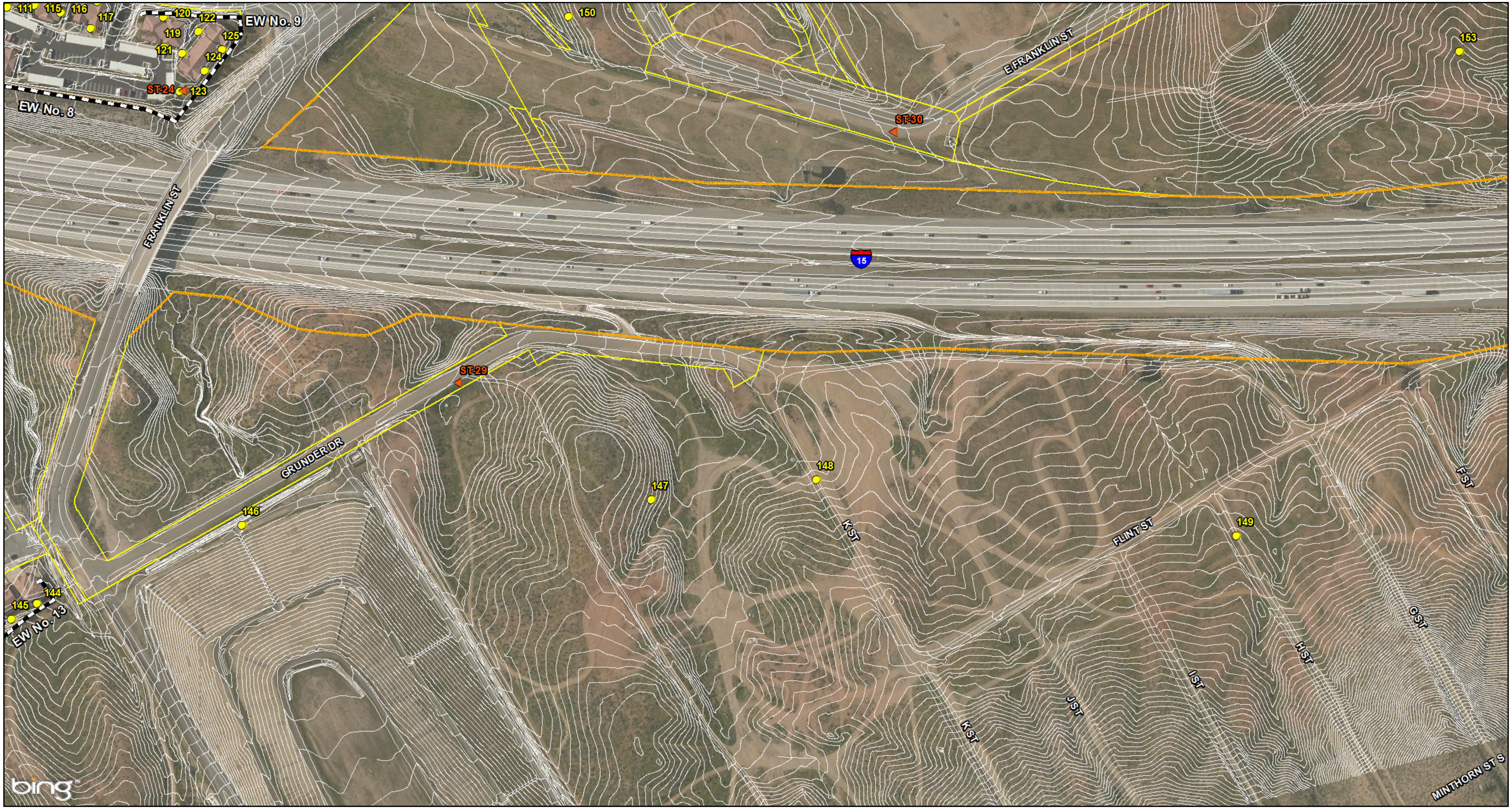


FIGURE 2.16.1
Sheet 5 of 7

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment
Sensitive Noise Receptor Locations

I:\SAE1401\Reports\IS_EA\Fig2-16-1_NoiseMonitoring.mxd (10/9/2015)

This page intentionally left blank



Monitoring Locations

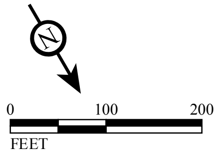
Modeled Receptor Locations

24-Hour Monitoring Locations

Existing Caltrans ROW

Existing City ROW

Existing Walls



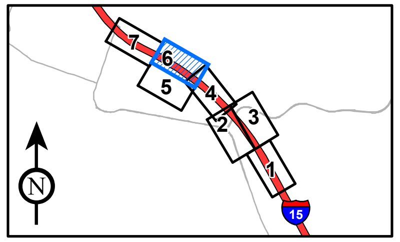


FIGURE 2.16.1

Sheet 6 of 7

08-RIV-15-PM 18.3/21.0

EA. 0A4400

I-15/Railroad Canyon Road Interchange

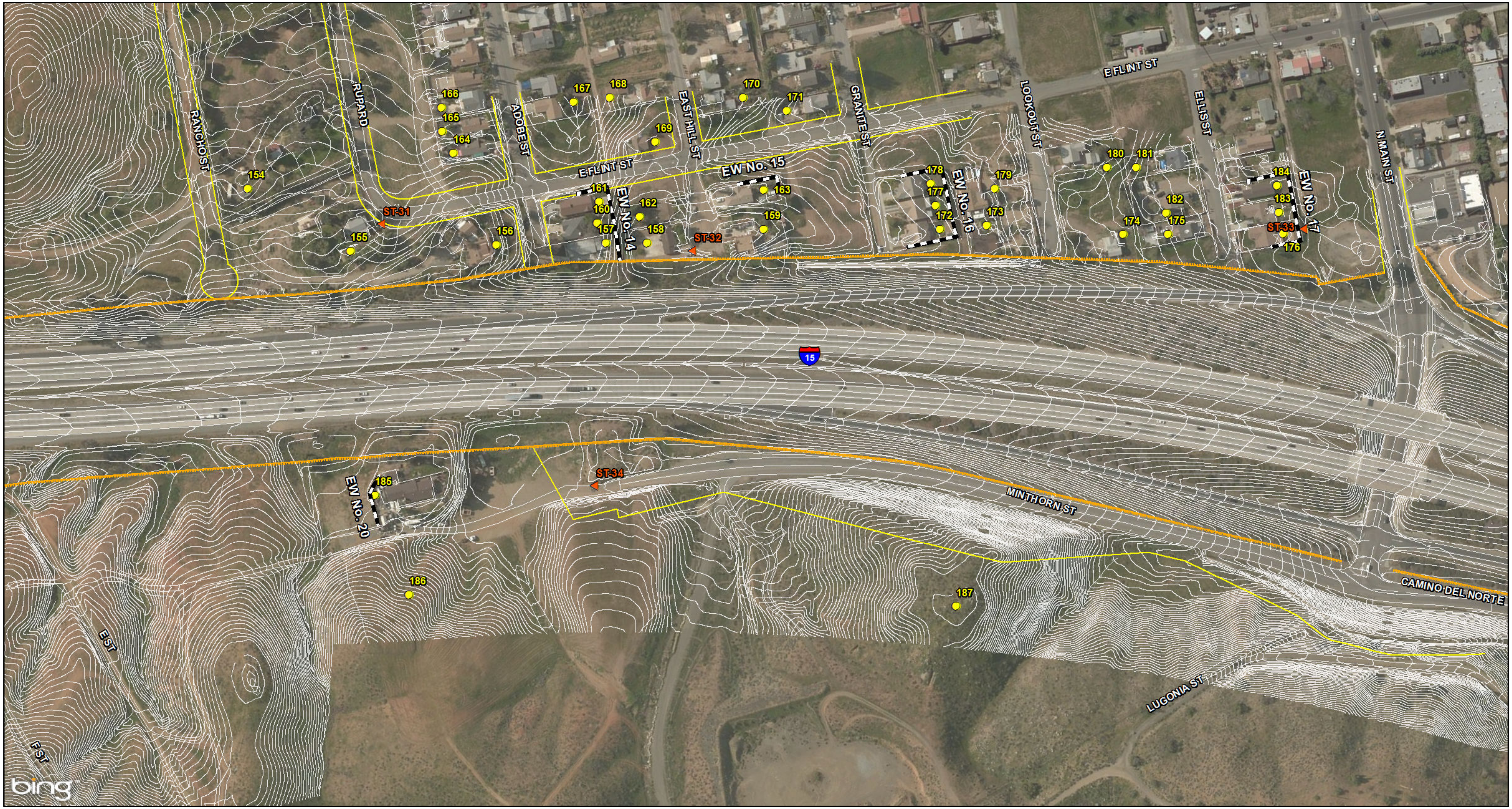
Initial Study/Environmental Assessment

Sensitive Noise Receptor Locations

SOURCE: Bing Maps, 2010; SC Engineering, 2014.

I:\SAE1401\Reports\IS_EA\Fig2-16-1_NoiseMonitoring.mxd (10/9/2015)

This page intentionally left blank



▲ Monitoring Locations
● Modeled Receptor Locations
■ 24-Hour Monitoring Locations
Existing Caltrans ROW
Existing City ROW
Existing Walls

0 100 200
FEET

SOURCE: Bing Maps, 2010; SC Engineering, 2014.

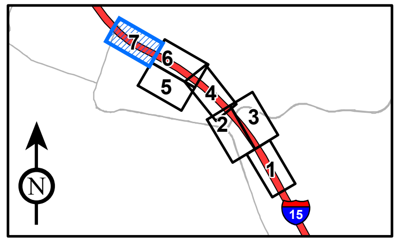


FIGURE 2.16.1
Sheet 7 of 7

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment
Sensitive Noise Receptor Locations

I:\SAE1401\Reports\IS_EA\Fig2-16-1_NoiseMonitoring.mxd (10/9/2015)

This page intentionally left blank

Table 2.16.C: Existing Traffic Noise Levels

Receptor No.	Location	Land Use	No. of Dwelling Units/ Receptors	Existing Noise Level, dBA L_{eq}(h)	Activity Category (NAC)
R-1	Grape Street	Vacant Land	1	--	G
R-2	Grape Street	Church	1	57/37[1]	C(67)/D(52)
R-3	Grape Street	Residential	1	--	B(67)
R-4	Grape Street	Residential	1	--	B(67)
R-5	Grape Street	Residential	1	--	B(67)
R-6	Mesa Drive	Residential	1	--	B(67)
R-7	Lakeview Terrace	Residential	2	--	B(67)
R-8	Sylvester Road	Residential	1	--	B(67)
R-9	Lakeview Terrace	Residential	1	63	B(67)
R-10	Lakeview Terrace	Residential	1	61	B(67)
R-11	Lakeview Terrace	Residential	1	61	B(67)
R-12	Lakeview Terrace	Residential	1	62	B(67)
R-13	Lakeview Terrace	Residential	1	63	B(67)
R-14	Lakeview Terrace	Residential	1	61	B(67)
R-15	Lakeview Terrace	Residential	1	62	B(67)
R-16	Lakeview Terrace	Residential	1	63	B(67)
R-17	Lakeview Terrace	Residential	1	**67**[2]	B(67)
R-18	Lakeview Terrace	Residential	1	63	B(67)
R-19	Lakeview Terrace	Residential	1	65	B(67)
R-20	Lakeview Terrace	Residential	1	58	B(67)
R-21	Lakeview Terrace	Residential	1	59	B(67)
R-22	Lakeview Terrace	Residential	1	61	B(67)
R-23	Lakeview Terrace	Residential	1	63	B(67)
R-24	Malaga Road	Casino	1	68	E[4]
R-25	Casino Drive	Hotel	1	54	E(72)
R-26	Casino Drive	Hotel	1	64	E(72)
R-27	Casino Drive	Church	1	62	D(52)
R-28	Casino Drive	Car Wash	1	62	E(72)
R-29	Casino Drive	Hotel	1	56	E(72)
R-30	Casino Drive	Restaurant	1	60	E(72)
R-31	Mission Trail	School	1	59/39[1]	C(67)/D(52)
R-32	Casino Drive	Vacant Land	1	60	G
R-33	Vista Way	Residential	2	59	B(67)
R-34	Vista Way	Residential	2	60	B(67)
R-35	Vista Way	Residential	2	60	B(67)
R-36	Vista Way	Residential	2	60	B(67)
R-37	Vista Way	Residential	2	60	B(67)
R-38	Vista Way	Residential	2	59	B(67)
R-39	Vista Way	Playground	1	58	C(67)
R-40	Vista Way	Residential	2	56	B(67)
R-41	Vista Way	Residential	2	55	B(67)
R-42	Boulder Road	Residential	2	60	B(67)
R-43	Boulder Road	Residential	2	58	B(67)
R-44	Boulder Road	Residential	2	56	B(67)
R-45	Boulder Road	Residential	2	59	B(67)
R-46	Park Point	Residential	2	59	B(67)
R-47	Park Point	Pool	1	61	C(67)
R-48	Park Point	Residential	2	57	B(67)
R-49	Park Point	Residential	2	57	B(67)
R-50	Park Point	Residential	2	57	B(67)

Table 2.16.C: Existing Traffic Noise Levels

Receptor No.	Location	Land Use	No. of Dwelling Units/ Receptors	Existing Noise Level, dBA L_{eq}(h)	Activity Category (NAC)
R-51	Oak Tree	Residential	2	61	B(67)
R-52	Oak Tree	Residential	2	60	B(67)
R-53	Oak Tree	Residential	2	58	B(67)
R-54	Drexel Court	Residential	2	65	B(67)
R-55	Drexel Court	Residential	2	64	B(67)
R-56	Grape Street	Restaurant	1	58	E(72)
R-57	Grape Street	Commercial	1	59	E
R-58	Grape Street	Restaurant	1	71	E
R-59	Grape Street	Restaurant	1	66	E(72)
R-60	Grape Street	Commercial	1	68	E
R-61	Grape Street	Commercial	1	62	E
R-62	Railroad Canyon Road	Commercial	1	66	E
R-63	Casino Drive	Restaurant	1	65	E
R-64	Casino Drive	Commercial	1	58	E
R-65	Casino Drive	Restaurant	1	57	E(72)
R-66	Casino Drive	Commercial	1	65	E
R-67	Diamond Drive	Commercial	1	64	E
R-68	Mission Trail	Commercial	1	58	E
R-69	Mission Trail	Restaurant	1	63	E
R-70	Mission Trail	Restaurant	1	64	E
R-71	Mission Trail	Commercial	1	69	E
R-72	Diamond Drive	Commercial	1	68	E
R-73	Diamond Drive	Medical Facility	1	65/45[1]	D(52)
R-74	East Lakeshore Drive	Office	1	66	E
R-75	Railroad Canyon Road	Restaurant	1	68	E(72)
R-76	East Lakeshore Drive	Commercial	1	65	E
R-77	Diamond Drive	Restaurant	1	67	E
R-78	Diamond Drive	Commercial	1	60	E
R-79	Auto Center Drive	Commercial	1	67	E
R-80	Auto Center Drive	Hotel	1	64	E(72)
R-81	Railroad Canyon Road	Restaurant	1	66	E(72)
R-82	Summerhill Drive	Restaurant	1	67	E
R-83	Railroad Canyon Road	Commercial	1	68	E
R-84	Railroad Canyon Road	Commercial	1	72	E
R-85	Canyon Estates Drive	Hotel	1	70	E
R-86	Canyon Estates Drive	Medical Facility	1	69/44[3]	D(52)
R-87	Canyon Estates Drive	Vacant Land	1	72	G
R-88	Canyon Estates Drive	Commercial	1	68	E
R-89	Auto Center Drive	Commercial	1	74	E
R-90	Auto Center Drive	Commercial	1	73	E
R-91	Auto Center Drive	Residential	2	62	B(67)
R-92	Auto Center Drive	Residential	2	64	B(67)
R-93	Auto Center Drive	Residential	2	62	B(67)
R-94	Auto Center Drive	Residential	2	**66**	B(67)
R-95	Auto Center Drive	Residential	2	57	B(67)
R-96	Auto Center Drive	Residential	2	60	B(67)
R-97	Auto Center Drive	Residential	2	63	B(67)
R-98	Auto Center Drive	Residential	2	61	B(67)
R-99	Auto Center Drive	Residential	2	62	B(67)
R-100	Auto Center Drive	Residential	2	54	B(67)
R-101	Auto Center Drive	Pool	1	59	C(67)

Table 2.16.C: Existing Traffic Noise Levels

Receptor No.	Location	Land Use	No. of Dwelling Units/ Receptors	Existing Noise Level, dBA L_{eq}(h)	Activity Category (NAC)
R-102	Auto Center Drive	Residential	2	58	B(67)
R-103	Auto Center Drive	Residential	2	60	B(67)
R-104	Auto Center Drive	Residential	2	55	B(67)
R-105	Auto Center Drive	Residential	2	57	B(67)
R-106	Auto Center Drive	Playground	1	65	C(67)
R-107	Auto Center Drive	Residential	2	57	B(67)
R-108	Auto Center Drive	Residential	2	56	B(67)
R-109	Auto Center Drive	Residential	2	57	B(67)
R-110	Auto Center Drive	Residential	2	58	B(67)
R-111	Auto Center Drive	Residential	2	56	B(67)
R-112	Auto Center Drive	Residential	2	60	B(67)
R-113	Auto Center Drive	Residential	2	57	B(67)
R-114	Auto Center Drive	Residential	2	54	B(67)
R-115	Auto Center Drive	Residential	2	53	B(67)
R-116	Auto Center Drive	Residential	2	55	B(67)
R-117	Auto Center Drive	Residential	2	57	B(67)
R-118	Auto Center Drive	Residential	2	60	B(67)
R-119	Auto Center Drive	Residential	2	56	B(67)
R-120	Auto Center Drive	Residential	2	59	B(67)
R-121	Auto Center Drive	Residential	2	54	B(67)
R-122	Auto Center Drive	Residential	2	56	B(67)
R-123	Auto Center Drive	Playground	1	59	C(67)
R-124	Auto Center Drive	Residential	2	59	B(67)
R-125	Auto Center Drive	Residential	2	60	B(67)
R-126	Auto Center Drive	Commercial	1	53	E
R-127	Franklin Street	Vacant Land	1	54	G
R-128	Avenue 6	Residential	1	48	B(67)
R-129	Avenue 6	Residential	1	47	B(67)
R-130	Avenue 6	Residential	1	47	B(67)
R-131	Avenue 6	Residential	1	50	B(67)
R-132	Stoney Creek Drive	Residential	2	63	B(67)
R-133	Stoney Creek Drive	Residential	2	61	B(67)
R-134	Stoney Creek Drive	Residential	2	62	B(67)
R-135	Stoney Creek Drive	Residential	1	60	B(67)
R-136	Stoney Creek Drive	Residential	1	53	B(67)
R-137	Stoney Creek Drive	Residential	1	52	B(67)
R-138	Sagecrest Drive	Residential	1	59	B(67)
R-139	Sagecrest Drive	Residential	1	56	B(67)
R-140	Sagecrest Drive	Residential	1	53	B(67)
R-141	Sagecrest Drive	Residential	1	52	B(67)
R-142	Canyon View Drive	Residential	1	61	B(67)
R-143	Canyon View Drive	Residential	1	60	B(67)
R-144	Canyon View Drive	Residential	1	53	B(67)
R-145	Canyon View Drive	Residential	1	52	B(67)
R-146	Grunder Drive	Landfill	1	60	F
R-147	Grunder Drive	Vacant Land	1	63	G
R-148	Grunder Drive	Vacant Land	1	64	G
R-149	Grunder Drive	Vacant Land	1	63	G
R-150	East Franklin Street	Vacant Land	1	60	G
R-151	East Franklin Street	Vacant Land	1	60	G
R-152	East Franklin Street	Vacant Land	1	56	G

Table 2.16.C: Existing Traffic Noise Levels

Receptor No.	Location	Land Use	No. of Dwelling Units/ Receptors	Existing Noise Level, dBA L_{eq}(h)	Activity Category (NAC)
R-153	East Franklin Street	Vacant Land	1	64	G
R-154	Rupard Street	Residential	1	57	B(67)
R-155	Rupard Street	Residential	1	60	B(67)
R-156	Flint Street	Residential	1	61	B(67)
R-157	Adobe Street	Residential	1	63	B(67)
R-158	East Hill Street	Residential	1	65	B(67)
R-159	East Hill Street	Residential	1	64	B(67)
R-160	Adobe Street	Residential	1	62	B(67)
R-161	Adobe Street	Residential	1	61	B(67)
R-162	East Hill Street	Residential	1	64	B(67)
R-163	East Hill Street	Residential	1	61	B(67)
R-164	Adobe Street	Residential	1	56	B(67)
R-165	Adobe Street	Residential	1	56	B(67)
R-166	Adobe Street	Residential	1	55	B(67)
R-167	Adobe Street	Residential	1	57	B(67)
R-168	East Hill Street	Residential	1	58	B(67)
R-169	East Hill Street	Residential	1	61	B(67)
R-170	East Hill Street	Residential	1	60	B(67)
R-171	Granite Street	Residential	1	57	B(67)
R-172	Granite Street	Residential	1	62	B(67)
R-173	Lookout Drive	Residential	1	59	B(67)
R-174	Lookout Drive	Residential	1	54	B(67)
R-175	North Ellis Street	Residential	1	59	B(67)
R-176	North Ellis Street	Residential	1	61	B(67)
R-177	Granite Street	Residential	1	61	B(67)
R-178	Granite Street	Residential	1	60	B(67)
R-179	Lookout Drive	Residential	1	60	B(67)
R-180	Lookout Drive	Residential	1	60	B(67)
R-181	North Ellis Street	Residential	1	59	B(67)
R-182	North Ellis Street	Residential	1	56	B(67)
R-183	North Ellis Street	Residential	1	60	B(67)
R-184	North Ellis Street	Residential	1	60	B(67)
R-185	Minthorn Street	Residential	1	**67**	B(67)
R-186	Minthorn Street	Vacant Land	1	66	G
R-187	Minthorn Street	Vacant Land	1	73	G

Source: *Noise Study Report* (August 2015).
[1] Exterior/interior noise level. The interior noise level was determined using a 20 dB exterior-to-interior noise level reduction.
[2] Numbers in **bold** represent noise levels that approach or exceed the NAC.
[3] Exterior/interior noise level. The interior noise level was determined using a 25 dB exterior-to-interior noise level reduction.
[4] There are no outdoor frequent human use areas associated with this land use.

dB = decibels
dBA = A-weighted decibels
ft = foot/feet
L_{eq}(h) =1-hour A-weighted equivalent sound level
NAC = Noise Abatement Criteria

The second type of short-term noise impact is related to noise generated during excavation, grading, and roadway construction. Construction is performed in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics.

These various sequential phases would change the character of the noise generated and, therefore, the noise levels at the project area as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase. Table 2.16.D identifies the typical construction equipment noise levels (L_{max}) recommended for noise impact assessments, based on a distance of 50 ft between a piece of equipment and a noise receptor.

Table 2.16.D: Typical Construction Equipment Noise Levels

Equipment Description	Spec 721.560[1] L_{max} at 50 ft	Actual Measured[2] L_{max} at 50 ft
Backhoes	80	78
Compactor (ground)	80	83
Cranes	85	81
Dozers	85	82
Dump Truck	84	76
Excavators	85	81
Flatbed Trucks	84	74
Front-End Loaders	80	79
Graders	85	N/A[3]
Jackhammer	85	89
Pickup Truck	55	75
Pneumatic Tools	85	85
Pumps	77	81
Rock Drill	85	81
Roller	85	80
Scrapers	85	84
Tractors	84	N/A
Vibratory Pile Driver	95	101

Source: Federal Highway Administration. *Roadway Construction Noise Model* (January 2006).
Note: Noise levels reported in this table are rounded to the nearest whole number.

1 Maximum noise levels were developed based on Spec 721.560 from the CA/T program to be consistent with the City of Boston's Noise Code for the "Big Dig" project.

2 The maximum noise level was developed based on the average noise level measured for each piece of equipment during the CA/T program in Boston, Massachusetts.

3 Since the maximum noise level based on the average noise level measured for this piece of equipment was not available, the maximum noise level developed based on Spec 721.560 was used.

CA/T = Central Artery/Tunnel
ft = foot/feet
L_{max} = maximum instantaneous sound level
N/A = Not Applicable

Typical noise levels at 50 ft from an active construction area range up to 88 dBA L_{max} during the noisiest construction phases. The site preparation phase, which includes grading and paving, tends to generate the highest noise levels because the noisiest construction equipment is earthmoving equipment. Earthmoving and compacting equipment includes excavating machinery such as backfillers, bulldozers, front loaders, compactors, scrapers, and graders. Typical operating cycles for these types of construction equipment may involve 1 or 2 minutes of full-power operation followed by 3 or 4 minutes at lower power settings.

Construction of the project is expected to require the use of graders, bulldozers, water trucks, and pickup trucks. Noise associated with the use of construction equipment is estimated between 55 and 85 dBA L_{max} at a distance of 50 ft from the active construction area for the grading phase. As identified in Table 2.16.D, the maximum noise level generated by each grader is assumed to be approximately 85 dBA L_{max} at 50 ft from the grader in operation. Each bulldozer would generate approximately 85 dBA L_{max} at 50 ft. The maximum noise level generated by water trucks and pickup trucks is approximately 55 dBA L_{max} at 50 ft from these vehicles. Each doubling of the sound source with equal strength increases the noise level by 3 dBA. Each piece of construction equipment operates as an individual point source. The worst-case composite noise level at the nearest residence during this phase of construction would be 88 dBA L_{max} at a distance of 50 ft from an active construction area.

The closest sensitive receptors are located within 50 ft of the project construction area. Therefore, these receptor locations may be subject to short-term noise higher than the 88 dBA maximum noise level (L_{max}) generated by construction activities within the project area. With **Minimization Measures N-1** and **N-2** provided later, the potential short-term noise impacts during project construction would not be adverse.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

Impacts related to temporary noise generated by the project under Alternative 3 would be similar to impacts identified for Alternative 2. With **Minimization Measures N-1** and **N-2**, the potential short-term noise impacts during project construction would not be adverse.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

Impacts related to temporary noise generated by the project under Alternative 4 would be similar to impacts identified for Alternative 2. With **Minimization Measures N-1 and N-**2, the potential short-term noise impacts during project construction would not be adverse.

2.16.3.2 Permanent Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

Potential long-term noise impacts under the No Build Alternative would be solely from traffic noise. Future No Build Alternative noise levels are provided in Table 2.16.E. Of the modeled receptors, 6 receptors would or would continue to approach or exceed the NAC under the No Build Alternative future year conditions.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

Long-Term Exterior Noise Impacts

The project as proposed under Alternative 2 is considered a Type 1 project because it would alter the vertical and horizontal alignment of Railroad Canyon Road, the I-15 on- and off- ramps at Railroad Canyon Road and Main Street, and add a new overcrossing at Franklin Street. Potential long-term noise associated with project operations under this alternative would be solely from traffic noise. Traffic noise impacts occur when either of the following occurs: (1) the traffic noise level at a sensitive receptor is predicted to approach or exceed the NAC, or (2) the predicted traffic noise level at a sensitive receptor is 12 dBA or more over the corresponding modeled existing noise level at that sensitive receptor. When traffic noise impacts occur, noise abatement measures must be considered.

Future traffic noise levels at all receptor locations were determined with existing walls using 2040 p.m. peak-hour traffic volumes obtained from the *Supplemental Traffic Impact Analysis* (November 2014). Traffic noise was evaluated under existing conditions, design year no build conditions (future no build), and design year conditions with the project alternatives.

Table 2.16.E: Alternative 2 Predicted Future Noise Analysis (dBA L_{eq})

Receptor No.	Location	Existing Noise Level, dBA L_{eq}(h)	Future Noise Levels (dBA L_{eq}(h)) 2040 Noise Level		
			No Build	**Build**	**Build Minus Existing Conditions**
R-1	Grape Street	--[1]	--[1]	--[1]	N/A
R-2	Grape Street	57/37[2]	58/38[2]	58/38[2]	1
R-3	Grape Street	--[1]	--[1]	--[1]	N/A
R-4	Grape Street	--[1]	--[1]	--[1]	N/A
R-5	Grape Street	--[1]	--[1]	--[1]	N/A
R-6	Mesa Drive	--[1]	--[1]	--[1]	N/A
R-7	Lakeview Terrace	--[1]	--[1]	--[1]	N/A
R-8	Sylvester Road	--[1]	--[1]	--[1]	N/A
R-9	Lakeview Terrace	63[1]	64[1]	64[1]	1
R-10	Lakeview Terrace	61[1]	62[1]	62[1]	1
R-11	Lakeview Terrace	61[1]	62[1]	62[1]	1
R-12	Lakeview Terrace	62[1]	63[1]	63[1]	1
R-13	Lakeview Terrace	63[1]	64[1]	64[1]	1
R-14	Lakeview Terrace	61[1]	62[1]	62[1]	1
R-15	Lakeview Terrace	62[1]	63[1]	63[1]	1
R-16	Lakeview Terrace	63	64	65	2
R-17	Lakeview Terrace	**67**[3]	**67**	**68**	1
R-18	Lakeview Terrace	63[1]	65[1]	65[1]	2
R-19	Lakeview Terrace	65[1]	66[1]	66[1]	1
R-20	Lakeview Terrace	58[1]	59[1]	59[1]	1
R-21	Lakeview Terrace	59	60	60	1
R-22	Lakeview Terrace	61	62	62	1
R-23	Lakeview Terrace	63	64	64	1
R-24	Malaga Road	68	69	70	2
R-25	Casino Drive	54	55	55	1
R-26	Casino Drive	64	65	65	1
R-27	Casino Drive	62	64	64	2
R-28	Casino Drive	62	63	63	1
R-29	Casino Drive	56	58	58	2
R-30	Casino Drive	60	62	62	2
R-31	Mission Trail	59/39[2]	61/41[2]	61/41[2]	2
R-32	Casino Drive	60	62	62	2
R-33	Vista Way	59	61	61	2
R-34	Vista Way	60	61	61	1
R-35	Vista Way	60	61	61	1
R-36	Vista Way	60	61	61	1
R-37	Vista Way	60	61	61	1
R-38	Vista Way	59	61	61	2
R-39	Vista Way	58	60	60	2
R-40	Vista Way	56	58	58	2
R-41	Vista Way	55	56	57	2
R-42	Boulder Road	60	61	61	1
R-43	Boulder Road	58	60	60	2
R-44	Boulder Road	56	57	57	1
R-45	Boulder Road	59	61	61	2
R-46	Park Point	59	61	61	2
R-47	Park Point	61	63	63	2
R-48	Park Point	57	59	59	2
R-49	Park Point	57	58	58	1
R-50	Park Point	57	58	58	1
R-51	Oak Tree	61	62	63	2
R-52	Oak Tree	60	61	62	2

Table 2.16.E: Alternative 2 Predicted Future Noise Analysis (dBA L_{eq})

Receptor No.	Location	Existing Noise Level, dBA L_{eq}(h)	Future Noise Levels (dBA L_{eq}(h)) 2040 Noise Level		
			No Build	Build	Build Minus Existing Conditions
R-53	Oak Tree	58	59	59	1
R-54	Drexel Court	65	**67**	**67**	2
R-55	Drexel Court	64	65	**66**	2
R-56	Grape Street	58	59	59	1
R-57	Grape Street	59	61	60	1
R-58	Grape Street	71	74	73	2
R-59	Grape Street	66	68	67	1
R-60	Grape Street	68	70	69	1
R-61	Grape Street	62	66	64	2
R-62	Railroad Canyon Road	66	69	68	2
R-63	Casino Drive	65	67	67	2
R-64	Casino Drive	58	60	60	2
R-65	Casino Drive	57	59	59	2
R-66	Casino Drive	65	67	67	2
R-67	Diamond Drive	64	66	66	2
R-68	Mission Trail	58	59	59	1
R-69	Mission Trail	63	65	65	2
R-70	Mission Trail	64	66	66	2
R-71	Mission Trail	69	71	71	2
R-72	Diamond Drive	68	69	69	1
R-73	Diamond Drive	65/45[2]	66/46[2]	67/47[2]	2
R-74	East Lakeshore Drive	66	68	68	2
R-75	Railroad Canyon Road	68	70	69	1
R-76	East Lakeshore Drive	65	67	67	2
R-77	Diamond Drive	67	69	68	1
R-78	Diamond Drive	60	62	62	2
R-79	Auto Center Drive	67	69	69	2
R-80	Auto Center Drive	64	65	65	1
R-81	Railroad Canyon Road	66	68	67	1
R-82	Summerhill Drive	67	70	68	1
R-83	Railroad Canyon Road	68	71	70	2
R-84	Railroad Canyon Road	72	74	74	2
R-85	Canyon Estates Drive	70	70	70	0
R-86	Canyon Estates Drive	69/44[4]	70/45[4]	71/46[4]	2
R-87	Canyon Estates Drive	72	73	75	3
R-88	Canyon Estates Drive	68	69	70	2
R-89	Auto Center Drive	74	75	76	2
R-90	Auto Center Drive	73	73	76	3
R-91	Auto Center Drive	62	63	63	1
R-92	Auto Center Drive	64	65	**66**	2
R-93	Auto Center Drive	62	63	64	2
R-94	Auto Center Drive	**66**	**66**	**68**	2
R-95	Auto Center Drive	57	58	59	2
R-96	Auto Center Drive	60	61	61	1
R-97	Auto Center Drive	63	64	64	1
R-98	Auto Center Drive	61	62	63	2
R-99	Auto Center Drive	62	63	63	1
R-100	Auto Center Drive	54	55	55	1
R-101	Auto Center Drive	59	59	60	1
R-102	Auto Center Drive	58	59	59	1
R-103	Auto Center Drive	60	62	63	3
R-104	Auto Center Drive	55	56	57	2

Table 2.16.E: Alternative 2 Predicted Future Noise Analysis (dBA L_{eq})

Receptor No.	Location	Existing Noise Level, dBA L_{eq}(h)	Future Noise Levels (dBA L_{eq}(h)) 2040 Noise Level		
			No Build	Build	Build Minus Existing Conditions
R-105	Auto Center Drive	57	59	59	2
R-106	Auto Center Drive	65	**66**	**67**	2
R-107	Auto Center Drive	57	58	59	2
R-108	Auto Center Drive	56	57	57	1
R-109	Auto Center Drive	57	58	59	2
R-110	Auto Center Drive	58	60	62	4
R-111	Auto Center Drive	56	57	58	2
R-112	Auto Center Drive	60	62	64	4
R-113	Auto Center Drive	57	58	59	2
R-114	Auto Center Drive	54	56	56	2
R-115	Auto Center Drive	53	55	55	2
R-116	Auto Center Drive	55	56	57	2
R-117	Auto Center Drive	57	58	59	2
R-118	Auto Center Drive	60	62	64	4
R-119	Auto Center Drive	56	57	59	3
R-120	Auto Center Drive	59	61	63	4
R-121	Auto Center Drive	54	55	56	2
R-122	Auto Center Drive	56	58	60	4
R-123	Auto Center Drive	59	61	62	3
R-124	Auto Center Drive	59	61	62	3
R-125	Auto Center Drive	60	62	63	3
R-126	Auto Center Drive	53	55	55	2
R-127	Franklin Street	54	56	55	1
R-128	Avenue 6	48	49	48	0
R-129	Avenue 6	47	48	49	2
R-130	Avenue 6	47	49	50	3
R-131	Avenue 6	50	52	53	3
R-132	Stoney Creek Drive	63	64	65	2
R-133	Stoney Creek Drive	61	63	63	2
R-134	Stoney Creek Drive	62	63	63	1
R-135	Stoney Creek Drive	60	61	61	1
R-136	Stoney Creek Drive	53	55	55	2
R-137	Stoney Creek Drive	52	54	54	2
R-138	Sagecrest Drive	59	60	60	1
R-139	Sagecrest Drive	56	58	58	2
R-140	Sagecrest Drive	53	55	54	1
R-141	Sagecrest Drive	52	53	53	1
R-142	Canyon View Drive	61	63	63	2
R-143	Canyon View Drive	60	61	61	1
R-144	Canyon View Drive	53	54	55	2
R-145	Canyon View Drive	52	53	52	0
R-146	Grunder Drive	60	61	61	1
R-147	Grunder Drive	63	64	63	0
R-148	Grunder Drive	64	63	63	-1
R-149	Grunder Drive	63	64	66	3
R-150	East Franklin Street	60	62	58	-2
R-151	East Franklin Street	60	61	55	-5
R-152	East Franklin Street	56	57	58	2
R-153	East Franklin Street	64	65	60	-4
R-154	Rupard Street	57	58	56	-1
R-155	Rupard Street	60	60	--[5]	N/A
R-156	Flint Street	61	62	62	1

Table 2.16.E: Alternative 2 Predicted Future Noise Analysis (dBA L_{eq})

Receptor No.	Location	Existing Noise Level, dBA L_{eq}(h)	Future Noise Levels (dBA L_{eq}(h)) 2040 Noise Level		
			No Build	Build	Build Minus Existing Conditions
R-157	Adobe Street	63	63	63	0
R-158	East Hill Street	65	**66**	**66**	1
R-159	East Hill Street	64	65	**67**	3
R-160	Adobe Street	62	63	63	1
R-161	Adobe Street	61	62	62	1
R-162	East Hill Street	64	65	65	1
R-163	East Hill Street	61	62	63	2
R-164	Adobe Street	56	57	57	1
R-165	Adobe Street	56	56	56	0
R-166	Adobe Street	55	56	56	1
R-167	Adobe Street	57	58	58	1
R-168	East Hill Street	58	59	59	1
R-169	East Hill Street	61	62	64	3
R-170	East Hill Street	60	61	62	2
R-171	Granite Street	57	58	60	3
R-172	Granite Street	62	63	63	1
R-173	Lookout Drive	59	60	60	1
R-174	Lookout Drive	54	55	55	1
R-175	North Ellis Street	59	60	60	1
R-176	North Ellis Street	61	62	62	1
R-177	Granite Street	61	62	63	2
R-178	Granite Street	60	61	62	2
R-179	Lookout Drive	60	61	61	1
R-180	Lookout Drive	60	61	62	2
R-181	North Ellis Street	59	60	61	2
R-182	North Ellis Street	56	57	57	1
R-183	North Ellis Street	60	62	62	2
R-184	North Ellis Street	60	61	61	1
R-185	Minthorn Street	**67**	**68**	**71**	4
R-186	Minthorn Street	66	67	73	7
R-187	Minthorn Street	73	75	75	2

Source: *Noise Study Report* (August 2015).

1 The shaded area represents receptors located beyond the limits of construction under Alternative 2. Traffic noise impacts were not assessed for these receptors.
2 Exterior/interior noise level. The interior noise level was determined using a 20 dB exterior-to-interior noise level reduction.
3 Numbers in **bold** represent noise levels that approach or exceed the NAC.
4 Exterior/interior noise level. The interior noise level was determined using a 25 dB exterior-to-interior noise level reduction.
5 This receptor would be fully acquired by the project under Alternative 2.

dB = decibels
dBA = A-weighted decibels
L_{eq}(h) =1-hour A-weighted equivalent sound level
NAC = Noise Abatement Criteria

For roadway segments that exceed the worst-case traffic volume of 1,950 vehicles per lane per hour (vplph) for the mainline freeway and 900 vplph for on-ramps, the worst-case traffic volumes will be used instead of the p.m. peak-hour traffic volumes. The worst-case traffic condition is assumed to be Levels of Service (LOS) D/E and, traffic noise is generally loudest when vehicles on a given roadway travel at free-flowing traffic conditions. Accordingly, these worst-case traffic volume assumptions are based on the maximum number of vehicles that can typically travel in a given lane while still resulting in free-flowing traffic conditions.

Table 2.16.E provides the existing and future worst-case traffic noise level results for Alternative 2. Under the future with project conditions, of the modeled receptors, 9 receptors would approach or exceed the 67 dBA L_{eq} NAC. Of the modeled receptors, one of the sensitive receptors would approach or exceed the NAC under Activity Category C.

The following receptor locations would be or would continue to be exposed to noise levels that approach or exceed the NAC under Alternative 2 traffic conditions:

- **Receptors R-17:** This receptor location represents existing residences along Lakeview Terrace on the west side of I-15 south of Railroad Canyon Road. Currently, there is an approximately 5 ft high earthen berm located along the edge of shoulder that partially shields these residences. Noise barriers (NB) No. 2-1 for Alternative 2 was modeled at the top of slope within the State right-of-way to shield these residences.
- **Receptors R-54 and R-55:** These receptor locations represent existing residences along Drexel Court on the east side of I-15 south of Railroad Canyon Road. Currently there is an 8 ft high combination masonry block wall and Plexiglas barrier along the property line to shield these residences. Two noise barrier locations were considered to shield the impacted receptors. Under the first scenario, Existing Wall No. 5 (EW No. 5) was modeled at its current location at heights greater than the existing wall and renamed as NB No. 2-2 for Alternative 2 to shield these residences. Under the second scenario, NB No. 2-2B for Alternative 2 was modeled along the edge of road on the west side of Grape Street to shield these residences.
- **Receptors R-92, R-94, and R-106**: These receptor locations represent existing residences and the playground along Auto Center Drive on the west side of I-15 between Railroad Canyon Road and Main Street. Currently, there is a 3 to 6 ft high wall along the property line to shield the playground and residences. Two noise barrier locations were considered to shield the impacted receptors. Under the first scenario, a portion of EW No. 8 was evaluated with an increased height at its current location and renamed as NB No. 2-3 for Alternative 2, to shield these residences. Under the second scenario, a smaller section of Wall No. 8 (EW No. 8) was modeled at its current location at heights greater than the existing wall in addition to a new segment of barrier located along the west side of I-15 southbound. Both segments of the barrier were combined to be named NB No. 2-3B for Alternative 2, to shield these residences and the playground.
- **Receptors R-158 and R-159:** These receptor locations represent existing residences along East Hill Street on the west side of I-15 south of Main Street. Currently, there are no existing walls that shield these residences. One noise barrier for Alternative 2, NB No. 2-4, was modeled along the edge of shoulder to shield these residences.
- **Receptor R-185:** This receptor location represents an existing residence along Minthorn Street on the east side of I-15 south of Main Street. Currently there are no existing walls that shield this residence. One noise barrier for Alternative 2, NB No. 2-5 was modeled along the edge of shoulder to shield this residence.

Under NEPA 23 CFR 772, the regulations contain NAC that are used to determine when a noise impact would occur. If there is a substantial increase (12 dBA) in noise with the project and/or whether the noise approaches (within 1 dBA) or exceeds the NAC, the consideration of noise abatement is required. None of the identified receptors would result in a 12 dBA increase in noise. However, nine receptors would approach (within 1 dBA) or exceed the 67 dBA NAC threshold. Therefore, noise abatement would need to be considered for these receptors.

Long-Term Interior Noise Impacts

A church, school and two medical facilities were located within the project area. To determine the attenuation provided by each of the buildings, simultaneous noise measurements were taken inside and outside a room at each building. The measured building attenuation was applied to the predicted future worst-case exterior level to obtain the predicted future interior noise level. According to the Traffic Noise Analysis Protocol, interior noise levels under Activity Category D must not approach or exceed 52 dBA L_{eq}(h). Table 2.16.F identifies the predicted traffic noise levels for buildings in the project area under Alternative 2.

Table 2.16.F: Alternative 2 Interior Noise Analysis

Receptor No.	Location	Future Noise Levels, dBA L_{eq}(h) 2040 Noise Level		
		Exterior (dBA L_{eq})	Interior (dBA L_{eq})	Exterior to Interior Noise Level Reduction
R-2	Church	58	38[1]	20
R-31	School	61	41[1]	20
R-73	Medical Facility	67	47[1]	20
R-86	Medical Facility	71	46[2]	25

Source: *Noise Study Report* (August 2015).
[1] Exterior/interior noise level. The interior noise level was determined using a 20 dB exterior-to-interior noise level reduction.
[2] Exterior/interior noise level. The interior noise level was determined using a 25 dB exterior-to-interior noise level reduction.
dBA = A-weighted decibels
L_{eq}(h) =1-hour A-weighted equivalent sound level

Based on these projected traffic noise levels, interior noise levels at all buildings under Alternative 2 traffic conditions would not approach or exceed 52 dBA L_{eq} NAC. Therefore, no noise abatement measures for these buildings are required.

Noise Abatement Consideration

Noise abatement measures, such as noise barriers, were considered to shield noise-sensitive receptors located along I-15, where sensitive receptors exist and would continue to be exposed to traffic noise levels approaching or exceeding the NAC. Noise barriers were analyzed for each of these sensitive receptor locations. At each location, six noise barrier heights were analyzed: 6, 8, 10, 12, 14, and 16 ft. However, noise barriers with the height of 16 ft were not analyzed in locations where the modeled barrier would be located within 15 ft of the nearest travel lane (see California Department of Transportation [Caltrans] *Highway Design Manual,* January 2011).

The following barriers were analyzed to shield the sensitive receptor locations that would be exposed to traffic noise levels approaching or exceeding the NAC under Alternative 2:

- **NB No. 2-1:** A 927 ft long barrier along the top of slope within the State right-of-way on the west side of I-15 south of Railroad Canyon Road was analyzed to shield Receptor R-17.

- **NB No. 2-2:** A 200 ft long barrier along the property line on the east side of I-15 south of Railroad Canyon Road was analyzed to shield Receptors R-54 and R-55.
- **NB No. 2-2B:** As an alternative to NB No. 2-2, a 906 ft long barrier along the edge of shoulder on the west side of Grape Street was analyzed to shield Receptors R-54 and R-55.
- **NB No. 2-3:** A 929 ft long barrier along the property line on the west side of I-15 between Railroad Canyon Road and Main Street was analyzed to shield Receptors R-92, R-94, and R-106.
- **NB No. 2-3B:** As an alternative to NB No. 2-3, a two-segment barrier that is 1,225 ft long combined on the west side of I-15 between Railroad Canyon Road and Main Street was analyzed to shield Receptors R-92, R-94, and R-106.
- **NB No. 2-4:** A 1,305 ft long barrier along the edge of shoulder on the west side of I-15 south of Main Street was analyzed to shield Receptors R-158 and R-159.
- **NB No. 2-5:** A 1,058 ft long barrier along the edge of shoulder on the east side of I-15 south of Main Street was analyzed to shield Receptor R-185.

The results of the noise barrier analysis are provided in Tables 2.16.G and 2.16.H for the sensitive receptor locations that could be exposed to traffic noise levels approaching or exceeding the NAC. The analyzed noise barriers for Alternative 2 are illustrated in Figure 2.16.2.

Noise Barrier Feasibility

A minimum noise reduction of 5 dBA must be achieved at an impacted receptor for the noise abatement measure to be considered feasible. The feasibility criterion is not necessarily a noise abatement design goal. Greater noise reductions are encouraged if they can be reasonably achieved. Feasibility may also be restricted by the following factors: (1) topography, (2) access requirements for driveways and ramps, (3) the presence of local cross streets, (4) utility conflicts, (5) other noise sources in the area, and (6) safety considerations.

Of the seven modeled noise barriers evaluated for Alternative 2, four noise barriers were capable of reducing noise levels by 5 dBA or more, as required to be considered feasible. NB Nos. 2-1, 2-2B, and 2-5 were determined to not be feasible because the barrier would not reduce noise levels by 5 dBA or more. Table 2.16.I lists all the feasible noise barriers for Alternative 2.

Noise Barrier Reasonableness

The overall reasonableness of noise abatement is determined by considering a multitude of factors, including, but not necessarily limited to, the following:

- Construction cost of the barrier
- Noise reduction design goal (a noise level reduction of 7 dBA or more at one or more benefited receptors)
- Viewpoints of benefited receptors (including property owners and residents of the benefited receptors)

Table 2.16.G: Alternative 2 Noise Barrier Analysis (dBA L_{eq})

Receptor No.	NB No.	2040 Noise Level	Future Noise Levels (dBA L_{eq}(h))																	
			Noise Prediction with Barrier, Barrier I.L., and NBR																	
			6 ft			8 ft			10 ft			12 ft			14 ft			16 ft		
		Build	L_{eq}(h)	I.L.[1]	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR
R-1		--[2]	--[3]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-2		58/38[4]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-3		--[2]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-4		--[2]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-5		--[2]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-6		--[2]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-7		--[2]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-8		--[2]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-9	2-1	64[2]	64	0	0	64	0	0	63	1	0	63	1	0	63	1	0	63	1	0
R-10		62[2]	61	1	0	60	2	0	60	2	0	60	2	0	60	2	0	59	3	0
R-11		62[2]	61	1	0	61	1	0	61	1	0	60	2	0	60	2	0	60	2	0
R-12		63[2]	61	2	0	61	2	0	61	2	0	60	3	0	60	3	0	60	3	0
R-13		64[2]	62	2	0	61	3	0	61	3	0	60	4	0	60	4	0	60	4	0
R-14		62[2]	61	1	0	61	1	0	60	2	0	60	2	0	60	2	0	60	2	0
R-15		63[2]	62	1	0	62	1	0	61	2	0	60	3	0	60	3	0	60	3	0
R-16		65	63	2	0	63	2	0	62	3	0	62	3	0	61	4	0	61	4	0
R-17		**68**	**66**	2	0	**66**	2	0	**66**	2	0	65	3	0	65	3	0	65	3	0
R-18		65[2]	63	2	0	62	3	0	62	3	0	61	4	0	61	4	0	<u>60</u>[6]	<u>5</u>	1
R-19		66[2]	64	2	0	63	3	0	63	3	0	62	4	0	62	4	0	62	4	0
R-20		59[2]	58	1	0	58	1	0	58	1	0	58	1	0	58	1	0	58	1	0
R-21		60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-22		62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-23		64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-24		70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-25		55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-26		65	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-27		64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-28		63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-29		58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-30		62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-31		61/41[4]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-32		62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-33		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-34		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-35		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 2.16.G: Alternative 2 Noise Barrier Analysis (dBA L_{eq})

Receptor No.	NB No.	2040 Noise Level	Future Noise Levels (dBA L_{eq}(h))																	
			Noise Prediction with Barrier, Barrier I.L., and NBR																	
			6 ft			8 ft			10 ft			12 ft			14 ft			16 ft		
		Build	L_{eq}(h)	I.L.[1]	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR
R-36		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-37		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-38		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-39		60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-40		58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-41		57	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-42		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-43		60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-44		57	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-45		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-46		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-47		63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-48		59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-49		58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-50		58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-51		63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-52		62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-53		59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-54	2-2	**67**	--[7]	--	--	--	--	--	65	2	0	65	2	0	63	4	0	62[8]	5	2
R-55		**66**	--	--	--	--	--	--	65	1	0	64	2	0	63	3	0	62	4	0
R-56		59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-57		60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-58		73	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-59		67	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-60		69	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-61		64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-62		68	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-63		67	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-64		60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-65		59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-66		67	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-67		66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-68		59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-69		65	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-70		66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 2.16.G: Alternative 2 Noise Barrier Analysis (dBA L_{eq})

Receptor No.	NB No.	2040 Noise Level	Future Noise Levels (dBA $L_{eq}(h)$)																				
			Noise Prediction with Barrier, Barrier I.L., and NBR																				
			6 ft			8 ft			10 ft			12 ft			14 ft			16 ft					
		Build	$L_{eq}(h)$	I.L.[1]	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR	$L_{eq}(h)$	I.L.	NBR			
R-71		71	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
R-72		69	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
R-73		67/47[4]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
R-74		68	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
R-75		69	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
R-76		67	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
R-77		68	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
R-78		62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
R-79		69	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
R-80		65	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
R-81		67	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
R-82		68	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
R-83		70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
R-84		74	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
R-85		70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
R-86		71/46[9]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
R-87		75	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
R-88		70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
R-89		76	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
R-90		76	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--			
R-91		63	63	0	0	60	3	0	58	5	2	56	7	2	56	7	2	55	8	2			
R-92		**66**	**66**	0	0	63	3	0	62	4	0	61	5	2	60	6	2	59	7	2			
R-93		64	64	0	0	62	2	0	61	3	0	60	4	0	59	5	2	58	6	2			
R-94		**68**	64	4	0	61	7	2	60	8	2	58	10	2	57	11	2	57	11	2			
R-95		59	59	0	0	58	1	0	58	1	0	57	2	0	57	2	0	57	2	0			
R-96		61	61	0	0	60	1	0	59	2	0	59	2	0	58	3	0	58	3	0			
R-97		64	64	0	0	62	2	0	62	2	0	61	3	0	60	4	0	60	4	0			
R-98	2-3	63	63	0	0	61	2	0	59	4	0	57	6	2	57	6	2	56	7	2			
R-99		63	63	0	0	62	1	0	61	2	0	60	3	0	60	3	0	59	4	0			
R-100		55	55	0	0	55	0	0	55	0	0	54	1	0	54	1	0	54	1	0			
R-101		60	60	0	0	59	1	0	58	2	0	58	2	0	57	3	0	56	4	0			
R-102		59	59	0	0	59	0	0	58	1	0	58	1	0	58	1	0	57	2	0			
R-103		63	63	0	0	63	0	0	63	0	0	63	0	0	63	0	0	63	0	0			
R-104		57	57	0	0	57	0	0	57	0	0	57	0	0	57	0	0	57	0	0			
R-105		59	59	0	0	59	0	0	59	0	0	58	1	0	58	1	0	58	1	0			

Table 2.16.G: Alternative 2 Noise Barrier Analysis (dBA L_{eq})

Receptor No.	NB No.	2040 Noise Level	Future Noise Levels (dBA L_{eq}(h))																	
			Noise Prediction with Barrier, Barrier I.L., and NBR																	
			6 ft			8 ft			10 ft			12 ft			14 ft			16 ft		
		Build	L_{eq}(h)	I.L.[1]	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR
R-106	2-3	**67**	**67**	0	0	**66**	1	0	65	2	0	64	3	0	63	4	0	63	4	0
R-107		59	59	0	0	57	2	0	56	3	0	56	3	0	55	4	0	55	4	0
R-108		57	57	0	0	57	0	0	57	0	0	57	0	0	57	0	0	57	0	0
R-109		59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-110		62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-111		58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-112		64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-113		59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-114		56	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-115		55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-116		57	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-117		59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-118		64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-119		59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-120		63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-121		56	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-122		60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-123		62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-124		62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-125		63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-126		55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-127		55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-128		48	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-129		49	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-130		50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-131		53	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-132		65	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-133		63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-134		63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-135		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-136		55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-137		54	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-138		60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-139		58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-140		54	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-141		53	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 2.16.G: Alternative 2 Noise Barrier Analysis (dBA L_{eq})

Receptor No.	NB No.	2040 Noise Level	Future Noise Levels (dBA L_{eq}(h))																	
			Noise Prediction with Barrier, Barrier I.L., and NBR																	
			6 ft			8 ft			10 ft			12 ft			14 ft			16 ft		
		Build	L_{eq}(h)	I.L.[1]	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR
R-142		63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-143		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-144		55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-145		52	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-146		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-147		63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-148		63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-149		66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-150		58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-151		55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-152		58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-153		60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-154		56	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-155		--[10]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-156	2-4	62	61	1	0	59	3	0	58	4	0	57	5	1	57	5	1	NP[11]	NP	0
R-157		63	63	0	0	60	3	0	59	4	0	58	5	1	58	5	1	NP	NP	0
R-158		**66**	64	2	0	64	2	0	61	5	1	60	6	1	60	6	1	NP	NP	0
R-159		**67**	64	3	0	63	4	0	63	4	0	61	6	1	60	7	1	NP	NP	0
R-160		63	62	1	0	59	4	0	58	5	1	58	5	1	57	6	1	NP	NP	0
R-161		62	61	1	0	59	3	0	59	3	0	58	4	0	58	4	0	NP	NP	0
R-162		65	63	2	0	63	2	0	61	4	0	60	5	1	60	5	1	NP	NP	0
R-163		63	62	1	0	62	1	0	61	2	0	60	3	0	59	4	0	NP	NP	0
R-164		57	57	0	0	56	1	0	55	2	0	55	2	0	55	2	0	NP	NP	0
R-165		56	56	0	0	56	0	0	55	1	0	54	2	0	54	2	0	NP	NP	0
R-166		56	55	1	0	55	1	0	54	2	0	54	2	0	54	2	0	NP	NP	0
R-167		58	57	1	0	56	2	0	55	3	0	54	4	0	54	4	0	NP	NP	0
R-168		59	58	1	0	58	1	0	56	3	0	56	3	0	55	4	0	NP	NP	0
R-169		64	62	2	0	62	2	0	61	3	0	61	3	0	61	3	0	NP	NP	0
R-170		62	61	1	0	61	1	0	60	2	0	60	2	0	59	3	0	NP	NP	0
R-171		60	60	0	0	60	0	0	59	1	0	59	1	0	59	1	0	NP	NP	0
R-172		63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-173		60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-174		55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-175		60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-176		62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-177		63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 2.16.G: Alternative 2 Noise Barrier Analysis (dBA L_{eq})

Receptor No.	NB No.	2040 Noise Level	Future Noise Levels (dBA L_{eq}(h))																	
			Noise Prediction with Barrier, Barrier I.L., and NBR																	
			6 ft			8 ft			10 ft			12 ft			14 ft			16 ft		
		Build	L_{eq}(h)	I.L.[1]	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR
R-178		62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-179		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-180		62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-181		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-182		57	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-183		62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-184		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-185	2-5	**71**	**70**	1	0	**70**	1	0	**70**	1	0	**69**	2	0	**68**	3	0	NP	NP	0
R-186		73	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-187		75	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Source: *Noise Study Report* (August 2015).

1 I.L.: Insertion Loss.
2 The shaded area represents receptors located beyond the limits of construction under Alternative 2. Traffic noise impacts were not assessed for these receptors.
3 Either no barrier was analyzed at this location because the modeled receptor would not approach or exceed the NAC or this receptor would be acquired under this alternative.
4 Exterior/interior noise level. The interior noise level was determined using a 20 dB exterior-to-interior noise level reduction.
5 Numbers in **bold** represent noise levels that approach or exceed the NAC.
6 Although a noise level reduction of 5 dBA or more can be achieved, this noise barrier is not considered feasible because it does not attenuate noise levels by at least 5 dBA at the impacted receptor.
7 Shaded area represents the existing wall height.
8 Underlined noise levels have been attenuated by at least 5 dBA (i.e., feasible barrier height).
9 Exterior/interior noise level. The interior noise level was determined using a 25 dB exterior-to-interior noise level reduction.
10 This receptor would be fully acquired by the project under Alternative 2.
11 NP = Not Permitted. Noise barriers within 15 ft of the nearest travel lane are not permitted to exceed 14 ft in height.

dB = decibels
dBA = A-weighted decibels
ft = foot/feet
L_{eq}(h) =1-hour A-weighted equivalent sound level
NAC = Noise Abatement Criteria
NB = Noise Barrier
NBR = Number of Benefited Receptors

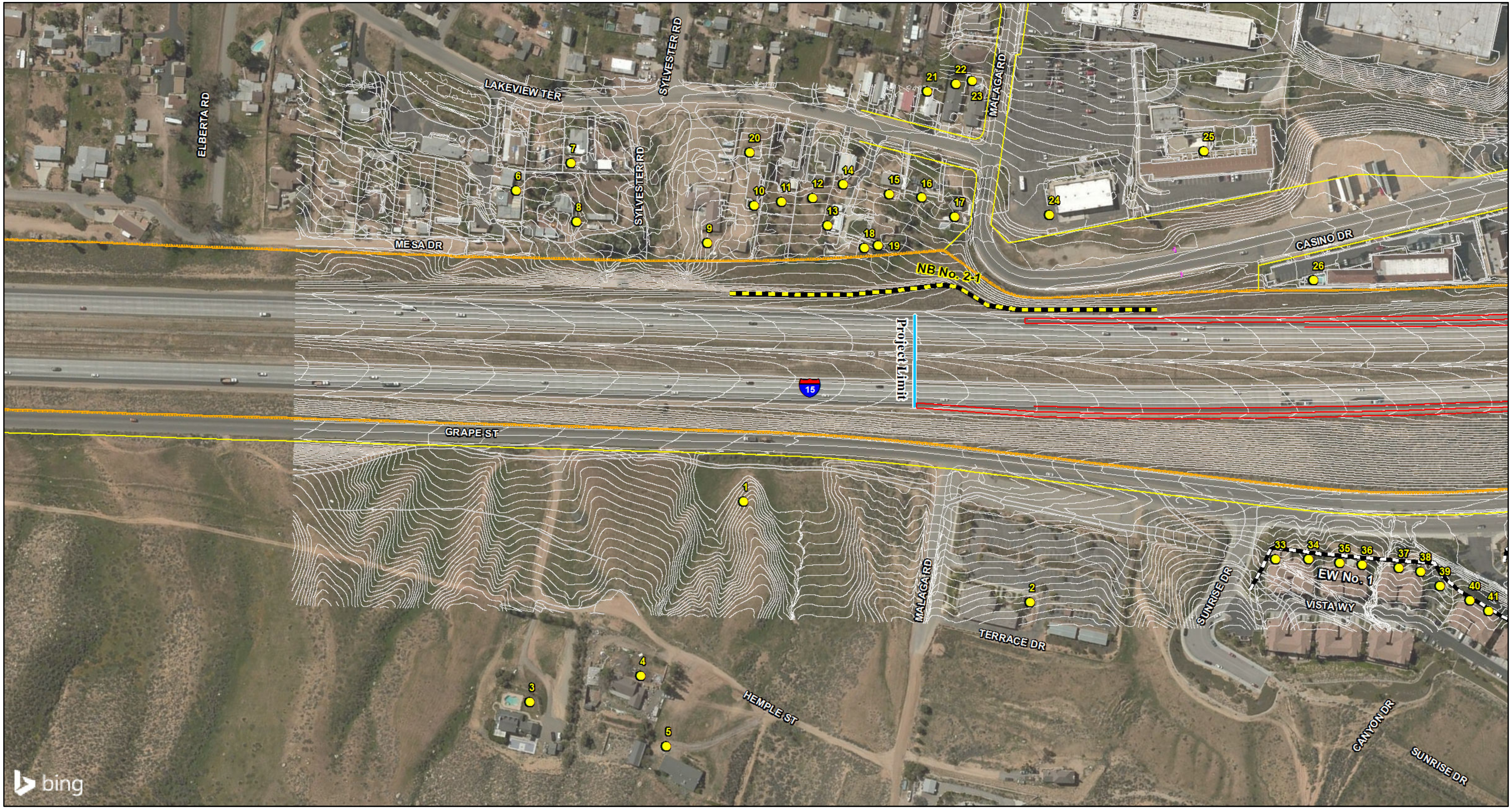
Table 2.16.H: Alternative 2 Noise Barrier Analysis (dBA L_{eq})

Receptor No.	NB No.	2040 Noise Level	Future Noise Levels (dBA Leq(h))																				
			Noise Prediction with Barrier, Barrier I.L., and NBR																		
			6 ft			8 ft			10 ft			12 ft			14 ft			16 ft		
		Build	Leq(h)	I.L.1	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR
R-54	2-2B	**67**[2]	**66**	1	0	**66**	1	0	65	2	0	65	2	0	65	2	0	NP[4]	NP	0
R-55		**66**	65	1	0	64	2	0	64	2	0	63	3	0	62	4	0	NP	NP	0
R-91	2-3B	63	63	0	0	62	1	0	61	2	0	60	3	0	59	4	0	59	4	0
R-92		**66**	65	1	0	64	2	0	63	3	0	63	3	0	62	4	0	61[4]	5	2
R-93		64	63	1	0	62	2	0	62	2	0	62	2	0	61	3	0	61	3	0
R-94		**68**	**67**	1	0	**67**	1	0	**66**	2	0	**66**	2	0	65	3	0	65	3	0
R-95		59	58	1	0	58	1	0	57	2	0	57	2	0	57	2	0	56	3	0
R-96		61	61	0	0	59	2	0	59	2	0	58	3	0	57	4	0	57	4	0
R-97		64	64	0	0	62	2	0	61	3	0	60	4	0	59[5]	5	2	59	5	2
R-98		63	63	0	0	61	2	0	59	4	0	58[5]	5	2	57[5]	6	2	57	6	2
R-99		63	63	0	0	62	1	0	61	2	0	60	3	0	59	4	0	59	4	0
R-100		55	55	0	0	55	0	0	55	0	0	54	1	0	54	1	0	54	1	0
R-101		60	60	0	0	59	1	0	58	2	0	57	3	0	56	4	0	55	5	2
R-102		59	59	0	0	59	0	0	59	0	0	58	1	0	58	1	0	58	1	0
R-103		63	63	0	0	63	0	0	63	0	0	63	0	0	63	0	0	63	0	0
R-104		57	57	0	0	57	0	0	57	0	0	57	0	0	57	0	0	56	1	0
R-105		59	59	0	0	59	0	0	59	0	0	58	1	0	58	1	0	58	1	0
R-106		**67**	67	0	0	**66**	1	0	65	2	0	64	3	0	63	4	0	63	4	0
R-107		59	59	0	0	57	2	0	56	3	0	56	3	0	55	4	0	55	4	0
R-108		57	57	0	0	57	0	0	57	0	0	57	0	0	57	0	0	57	0	0

Source: *Noise Study Report* (August 2015).
1 I.L.: Insertion Loss.
2 Numbers in bold represent noise levels that approach or exceed the NAC.
3 NP = Not Permitted. Noise barriers within 15 ft of the nearest travel lane are not permitted to exceed 14 ft in height.
4 Underlined noise levels have been attenuated by at least 5 dBA (i.e., feasible barrier height).
5 Although a noise level reduction of 5 dBA or more can be achieved, this noise barrier is not considered feasible because it does not attenuate noise levels by at least 5 dBA at the impacted receptor.

dB = decibels
dBA = A-weighted decibels
ft = foot/feet
L_{eq}(h) =1-hour A-weighted equivalent sound level

NAC = Noise Abatement Criteria
NB = Noise Barrier
NBR = Number of Benefited Receptors



Modeled Receptor Locations
Existing Walls
Modeled Noise Barriers
Alternative 2 Layout
Main St and Franklin St Layout
Existing City ROW
Existing Caltrans ROW
Alternative 2 Proposed ROW

0 100 200
FEET

SOURCE: Bing Maps, 2010; SC Engineering, 2014

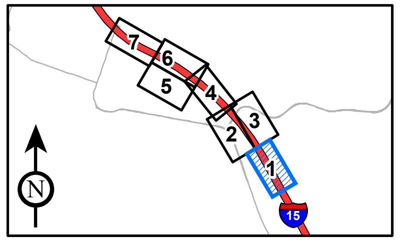


FIGURE 2.16.2
Sheet 1 of 7

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Alternative 2
Modeled Noise Barrier and Modeled Receptor Locations

I:\SAE1401\Reports\IS_EA\Fig2-16-2_ModNoiseBarrier_ReceptorLoc_Alt2.mxd (6/23/2017)

This page intentionally left blank

Modeled Receptor Locations
Existing Walls
Modeled Noise Barriers
Alternative 2 Layout
Main St and Franklin St Layout
Existing City ROW
Existing Caltrans ROW
Alternative 2 Proposed ROW

0 100 200
FEET

SOURCE: Bing Maps, 2010; SC Engineering, 2014

I:\SAE1401\Reports\IS_EA\Fig2-16-2_ModNoiseBarrier_ReceptorLoc_Alt2.mxd (6/23/2017)

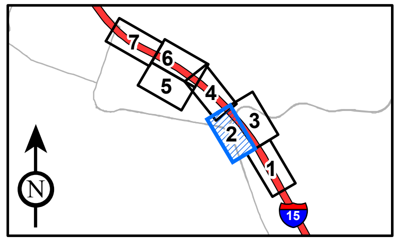
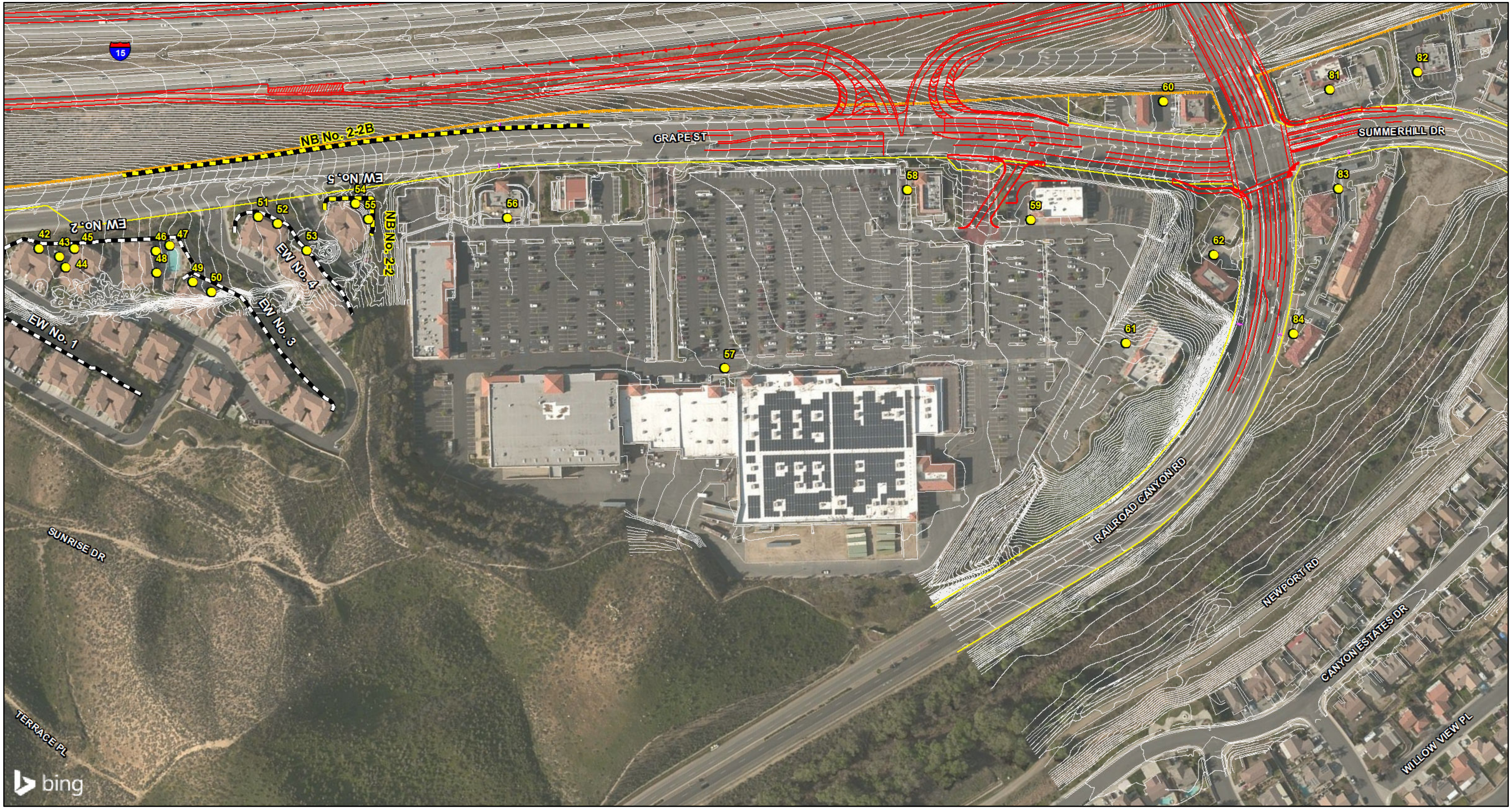


FIGURE 2.16.2
Sheet 2 of 7

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Alternative 2
Modeled Noise Barrier and Modeled Receptor Locations

This page intentionally left blank



Modeled Receptor Locations

Existing Walls

Modeled Noise Barriers

Alternative 2 Layout

Main St and Franklin St Layout

Existing City ROW

Existing Caltrans ROW

Alternative 2 Proposed ROW

0 100 200

FEET

SOURCE: Bing Maps, 2010; SC Engineering, 2014

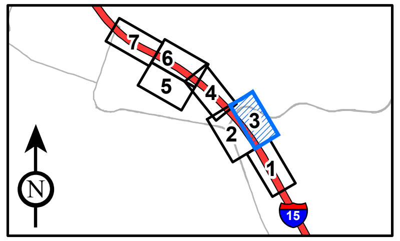


FIGURE 2.16.2

Sheet 3 of 7

08-RIV-15-PM 18.3/21.0

EA. 0A4400

I-15/Railroad Canyon Road Interchange

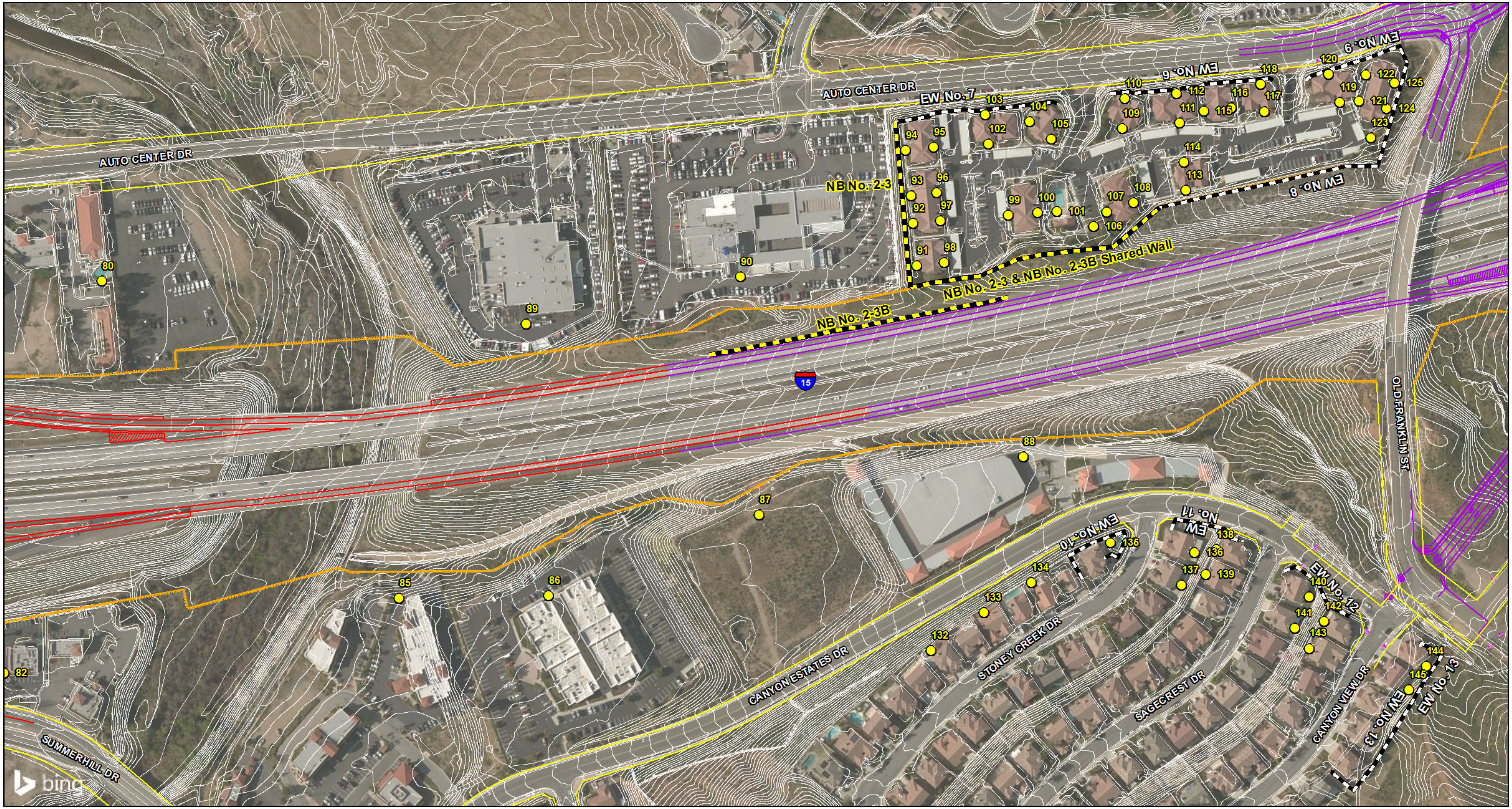
Initial Study/Environmental Assessment

Alternative 2

Modeled Noise Barrier and Modeled Receptor Locations

I:\SAE1401\Reports\IS_EA\Fig2-16-2_ModNoiseBarrier_ReceptorLoc_Alt2.mxd (6/23/2017)

This page intentionally left blank



Modeled Receptor Locations
Existing Walls
Modeled Noise Barriers
Alternative 2 Layout
Main St and Franklin St Layout
Existing City ROW
Existing Caltrans ROW
Alternative 2 Proposed ROW

0 100 200
FEET

SOURCE: Bing Maps, 2010; SC Engineering, 2014

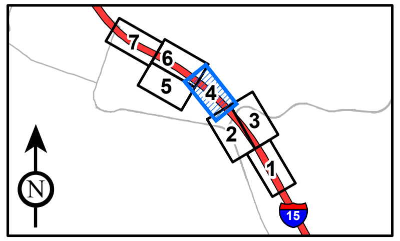


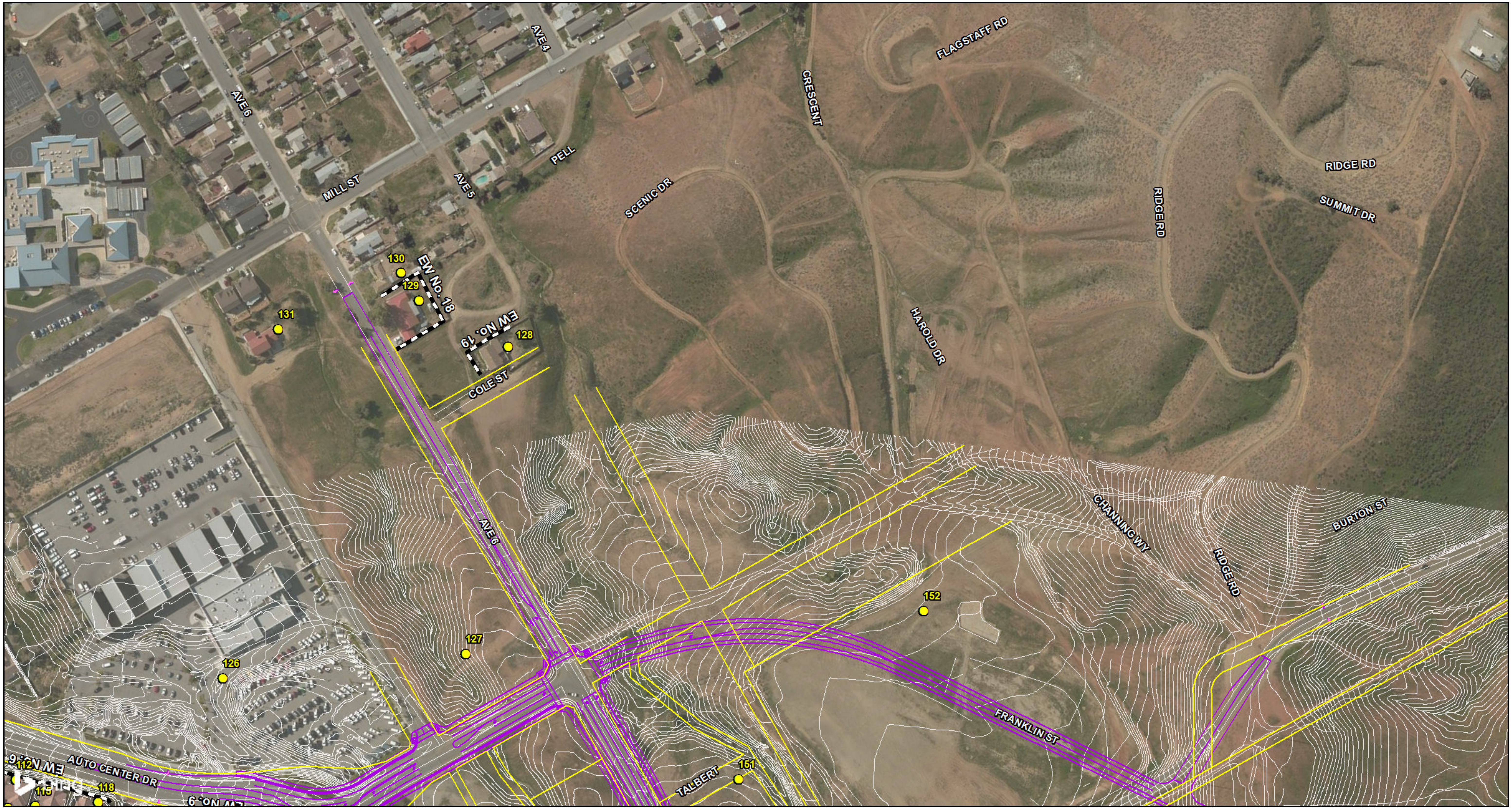
FIGURE 2.16.2
Sheet 4 of 7

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Alternative 2
Modeled Noise Barrier and Modeled Receptor Locations

I:\SAE1401\Reports\IS_EA\Fig2-16-2_ModNoiseBarrier_ReceptorLoc_Alt2.mxd (6/23/2017)

This page intentionally left blank



● Modeled Receptor Locations
Existing Walls
Modeled Noise Barriers
Alternative 2 Layout
Main St and Franklin St Layout
Existing City ROW
Existing Caltrans ROW
Alternative 2 Proposed ROW

N

0 100 200
FEET

SOURCE: Bing Maps, 2010; SC Engineering, 2014

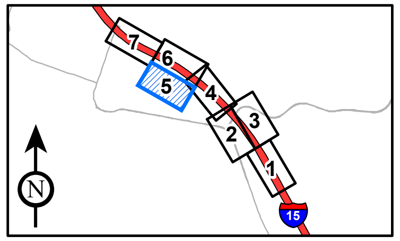


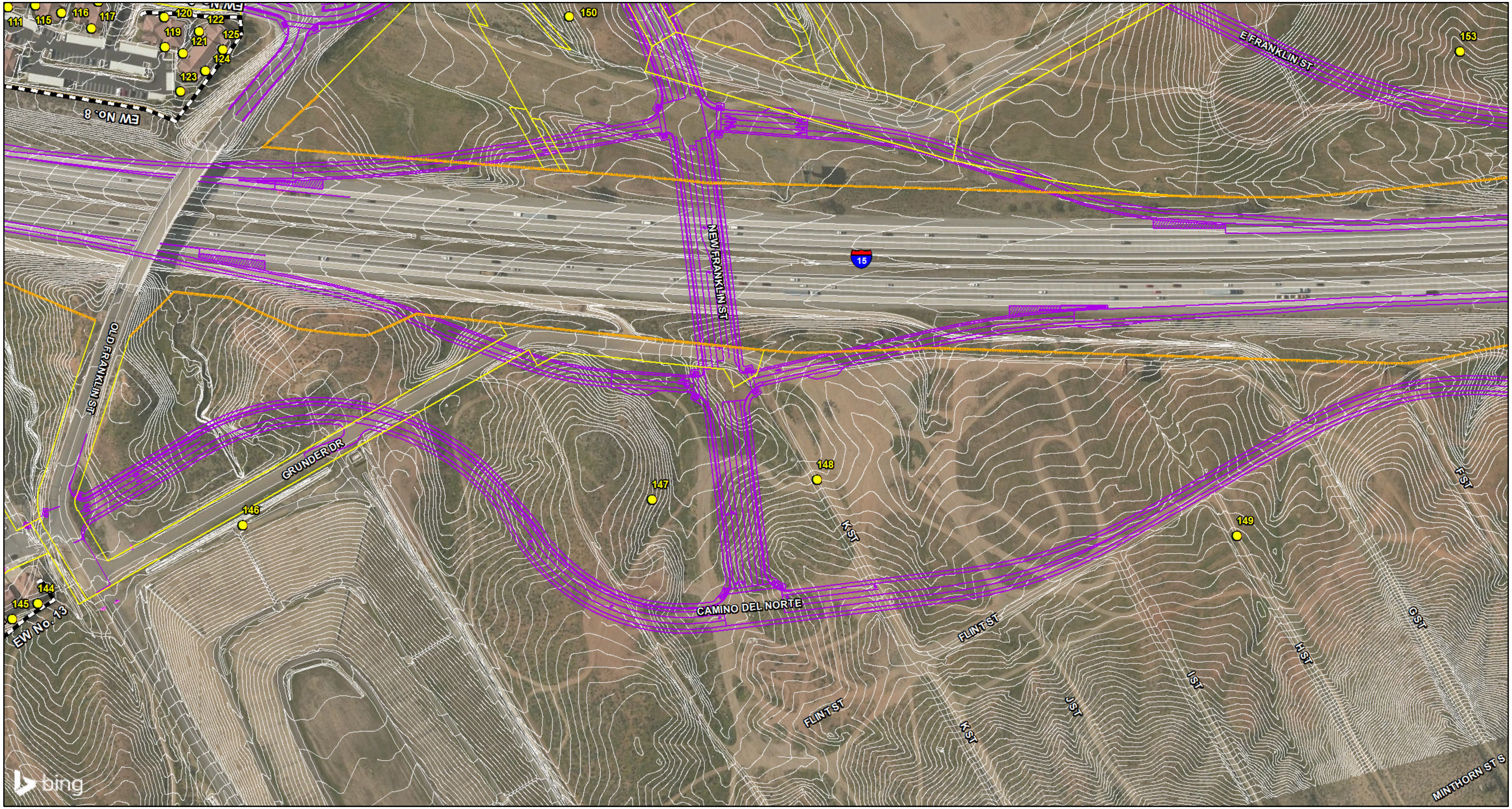
FIGURE 2.16.2
Sheet 5 of 7

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Alternative 2
Modeled Noise Barrier and Modeled Receptor Locations

I:\SAE1401\Reports\IS_EA\Fig2-16-2_ModNoiseBarrier_ReceptorLoc_Alt2.mxd (6/23/2017)

This page intentionally left blank



- Modeled Receptor Locations
- Existing Walls
- Modeled Noise Barriers
- Alternative 2 Layout
- Main St and Franklin St Layout
- Existing City ROW
- Existing Caltrans ROW
- Alternative 2 Proposed ROW

0 100 200
FEET

SOURCE: Bing Maps, 2010; SC Engineering, 2014

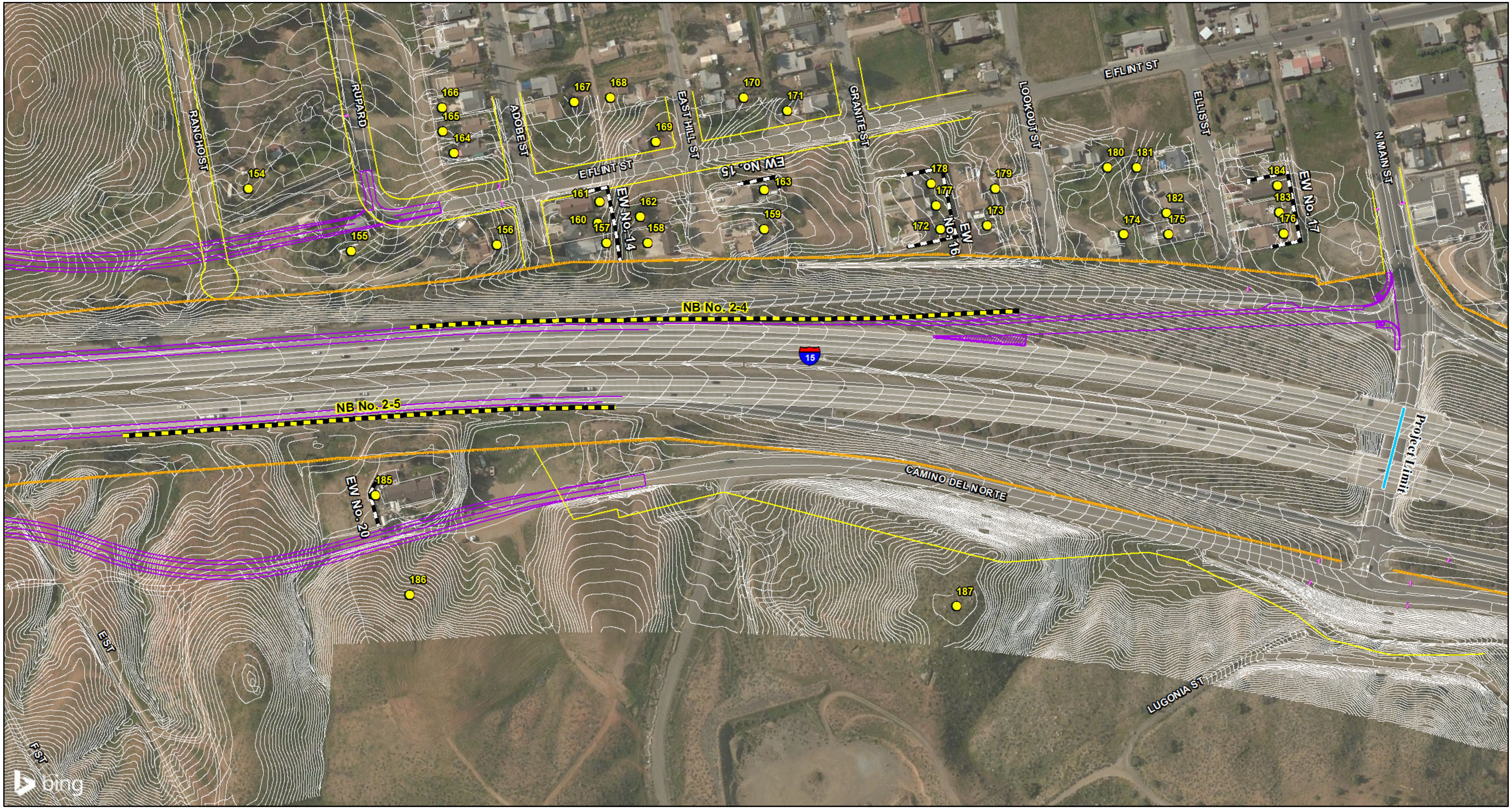
I:\SAE1401\Reports\IS_EA\Fig2-16-2_ModNoiseBarrier_ReceptorLoc_Alt2.mxd (6/23/2017)

FIGURE 2.16.2
Sheet 6 of 7

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Alternative 2
Modeled Noise Barrier and Modeled Receptor Locations

This page intentionally left blank



Modeled Receptor Locations
Existing Walls
Modeled Noise Barriers
Alternative 2 Layout
Main St and Franklin St Layout
Existing City ROW
Existing Caltrans ROW
Alternative 2 Proposed ROW

N
0 100 200
FEET

SOURCE: Bing Maps, 2010; SC Engineering, 2014

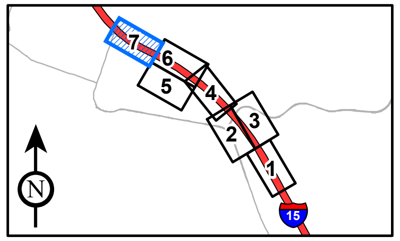


FIGURE 2.16.2
Sheet 7 of 7

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Alternative 2
Modeled Noise Barrier and Modeled Receptor Locations

I:\SAE1401\Reports\IS_EA\Fig2-16-2_ModNoiseBarrier_ReceptorLoc_Alt2.mxd (6/23/2017)

This page intentionally left blank

Table 2.16.I: Alternative 2 Feasible Noise Barriers

Noise Barrier No.	Height (ft)	Approximate Length (ft)	Receptor Locations Benefited	Number of Benefited Units[1]
2-2	16[2]	200	R-54	2
2-3	8[2]	929	R-94	2
	10	929	R-91, R-94	4
	12	929	R-91, R-92, R-94, R-98	8
	14	929	R-91 to R-94, R-98	10
	16	929	R-91 to R-94, R-98	10
2-3B	16[2]	1,225	R-92, R-97, R-98, R-101	8
2-4	10	1,225	R-158–R-160	2
	12[2]	1,225	R-156 to R-160, R-162	6
	14	1,225	R-156 to R-160, R-162	6

Source: *Noise Study Report* (August 2015).
[1] Number of units that are attenuated 5 dBA or more by the modeled barrier.
[2] Denotes the minimum wall height required to break the line-of-sight between the receptor and the truck exhaust stack.
ft = feet

A cost allowance per residence is assigned to each benefited residence (i.e., residences that receive at least 5 dBA of noise reduction from a noise barrier). The 2015 allowance is $71,000 per benefited residence. Total allowances are calculated by multiplying the cost allowance per residence by the number of benefited residences. Table 2.16.J provides additional information on the height, approximate length, receptor locations benefitted, noise attenuation range, number of benefited residences, reasonable allowance per residence, total reasonable allowance, estimated noise barrier construction costs, and whether the noise barrier is reasonable. As previously stated, all analyzed noise barriers under Alternative 2, with the exception of NB Nos. 2-1, 2-2B, and 2-5 were determined to be feasible. However, as indicated in Table 2.16.J, none of the feasible noise barriers under Alternative 2 were determined to be reasonable because the estimated noise barrier construction cost exceeded the total reasonable allowance.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

Similar to Alternative 2, the project as proposed under Alternative 3 is considered a Type 1 project because it would alter the vertical and horizontal alignment of Railroad Canyon Road, the I-15 on- and off- ramps at Railroad Canyon Road and Main Street, and add a new overcrossing at Franklin Street. Potential long-term noise associated with project operations under this alternative would be solely from traffic noise. Traffic noise impacts occur when either of the following occurs: (1) the traffic noise level at a sensitive receptor is predicted to approach or exceed the NAC, or (2) the predicted traffic noise level at a sensitive receptor is 12 dBA or more over the corresponding modeled existing noise level at that sensitive receptor. When traffic noise impacts occur, noise abatement measures must be considered.

Table 2.16.J: Alternative 2 Summary of Abatement Information

Noise Barrier No.	Height (ft)	Approximate Length (ft)	Receptor Locations Benefited	Noise Attenuation Range (dBA)	Number of Benefitted Units[1]	Reasonable Allowance per Benefited Unit	Total Reasonable Allowance	Estimated Noise Barrier Construction Cost[2]	Reasonable?
2-2	16[3]	200	R-54	5	2	$71,000	$142,000	--[4]	No
2-3	8[3]	929	R-94	7	2	$71,000	$142,000	$800,000	No
	10	929	R-91, R-94	5–8	4	$71,000	$248,000	$853,000	No
	12	929	R-91, R-92, R-94, R-98	5–10	8	$71,000	$568,000	$909,000	No
	14	929	R-91 to R-94, R-98	5-11	10	$71,000	$710,000	$966,000	No
	16	929	R-91 to R-94, R-98	6-11	10	$71,000	$710,000	$1,027,000	No
2-3B	16[3]	1,225	R-92, R-97, R-98, R-101	5-6	8	$71,000	$568,000	--[4]	No
2-4	10	1,305	R-158, R-160	5	2	$71,000	$142,000	--[4]	No
	12[3]	1,305	R-156 to R-160, R-162	5–6	6	$71,000	$426,000	--[4]	No
	14	1,305	R-156 to R-160, R-162	5–7	6	$71,000	$426,000	$854,000	No

Source: *Noise Abatement Decision Report* (December 2015).
[1] Number of units that are attenuated 5 dBA or more by the modeled barrier.
[2] Noise barrier construction cost information provided by SC Engineering.
[3] Denotes the minimum wall height required to break the line-of-sight between the receptor and the truck exhaust stack.
[4] Noise barrier height was determined to be not reasonable because the barrier would not achieve at least a noise level reduction of 7 dBA at one or more benefited receptors.
dBA = A-weighted decibels
ft = feet

Table 2.16.K provides the existing and future worst-case traffic noise level results for Alternative 3.

Table 2.16.K: Alternative 3 Predicted Future Noise Analysis (dBA L_{eq})

Receptor No.	Location	Existing Noise Level (dBA L_{eq}(h))	Future Noise Levels (dBA L_{eq}(h)) 2040 Noise Level		
			No Build	Build	Build Minus Existing Conditions
R-1	Grape Street	64	66	66	2
R-2	Grape Street	57/37[1]	58/38[1]	58/58[1]	1
R-3	Grape Street	55[2]	56[2]	56[2]	1
R-4	Grape Street	56	58	58	2
R-5	Grape Street	55	57	57	2
R-6	Mesa Drive	61[2]	62[2]	62[2]	1
R-7	Lakeview Terrace	60[2]	61[2]	61[2]	1
R-8	Sylvester Road	62[2]	63[2]	63[2]	1
R-9	Lakeview Terrace	63	64	64	1
R-10	Lakeview Terrace	61	62	62	1
R-11	Lakeview Terrace	61	62	62	1
R-12	Lakeview Terrace	62	63	63	1
R-13	Lakeview Terrace	63	64	64	1
R-14	Lakeview Terrace	61	62	62	1
R-15	Lakeview Terrace	62	63	63	1
R-16	Lakeview Terrace	63	64	65	2
R-17	Lakeview Terrace	**67**[3]	**67**	**68**	1
R-18	Lakeview Terrace	63	65	65	2
R-19	Lakeview Terrace	65	**66**	**66**	1
R-20	Lakeview Terrace	58	59	59	1
R-21	Lakeview Terrace	59	60	60	1
R-22	Lakeview Terrace	61	62	62	1
R-23	Lakeview Terrace	63	64	64	1
R-24	Malaga Road	68	69	70	2
R-25	Casino Drive	54	55	55	1
R-26	Casino Drive	64	65	66	2
R-27	Casino Drive	62	64	64	2
R-28	Casino Drive	62	63	64	2
R-29	Casino Drive	56	58	58	2
R-30	Casino Drive	60	62	62	2
R-31	Mission Trail	59/39[1]	61/41[1]	61/41[1]	2
R-32	Casino Drive	60	62	62	2
R-33	Vista Way	59	61	61	2
R-34	Vista Way	60	61	61	1
R-35	Vista Way	60	61	62	2
R-36	Vista Way	60	61	61	1
R-37	Vista Way	60	61	61	1
R-38	Vista Way	59	61	61	2
R-39	Vista Way	58	60	60	2
R-40	Vista Way	56	58	58	2
R-41	Vista Way	55	56	57	2
R-42	Boulder Road	60	61	61	1
R-43	Boulder Road	58	60	60	2
R-44	Boulder Road	56	57	57	1
R-45	Boulder Road	59	61	61	2

Table 2.16.K: Alternative 3 Predicted Future Noise Analysis (dBA L_{eq})

Receptor No.	Location	Existing Noise Level (dBA L_{eq}(h))	Future Noise Levels (dBA L_{eq}(h)) 2040 Noise Level		
			No Build	**Build**	**Build Minus Existing Conditions**
R-46	Park Point	59	61	61	2
R-47	Park Point	61	63	63	2
R-48	Park Point	57	59	59	2
R-49	Park Point	57	58	58	1
R-50	Park Point	57	58	58	1
R-51	Oak Tree	61	62	63	2
R-52	Oak Tree	60	61	62	2
R-53	Oak Tree	58	59	59	1
R-54	Drexel Court	65	**67**	**67**	2
R-55	Drexel Court	64	65	**66**	2
R-56	Grape Street	58	59	59	1
R-57	Grape Street	59	61	60	1
R-58	Grape Street	71	74	73	2
R-59	Grape Street	66	68	67	1
R-60	Grape Street	68	70	69	1
R-61	Grape Street	62	66	64	2
R-62	Railroad Canyon Road	66	69	68	2
R-63	Casino Drive	65	67	--[4]	N/A
R-64	Casino Drive	58	60	60	2
R-65	Casino Drive	57	59	59	2
R-66	Casino Drive	65	67	65	0
R-67	Diamond Drive	64	66	66	2
R-68	Mission Trail	58	59	60	2
R-69	Mission Trail	63	65	65	2
R-70	Mission Trail	64	66	66	2
R-71	Mission Trail	69	71	71	2
R-72	Diamond Drive	68	69	69	1
R-73	Diamond Drive	65/45[1]	66/46[1]	66/46[1]	1
R-74	East Lakeshore Drive	66	68	68	2
R-75	Railroad Canyon Road	68	70	69	1
R-76	East Lakeshore Drive	65	67	67	2
R-77	Diamond Drive	67	69	68	1
R-78	Diamond Drive	60	62	62	2
R-79	Auto Center Drive	67	69	69	2
R-80	Auto Center Drive	64	65	66	2
R-81	Railroad Canyon Road	66	68	67	1
R-82	Summerhill Drive	67	70	68	1
R-83	Railroad Canyon Road	68	71	70	2
R-84	Railroad Canyon Road	72	74	74	2
R-85	Canyon Estates Drive	70	70	70	0
R-86	Canyon Estates Drive	69/44[5]	70/45[5]	71/46[5]	2
R-87	Canyon Estates Drive	72	73	75	3
R-88	Canyon Estates Drive	68	69	70	2
R-89	Auto Center Drive	74	75	75	1
R-90	Auto Center Drive	73	73	76	3
R-91	Auto Center Drive	62	63	63	1
R-92	Auto Center Drive	64	65	65	1
R-93	Auto Center Drive	62	63	64	2

Table 2.16.K: Alternative 3 Predicted Future Noise Analysis (dBA L_{eq})

Receptor No.	Location	Existing Noise Level (dBA L_{eq}(h))	Future Noise Levels (dBA L_{eq}(h)) 2040 Noise Level		
			No Build	Build	Build Minus Existing Conditions
R-94	Auto Center Drive	**66**	**66**	**68**	2
R-95	Auto Center Drive	57	58	59	2
R-96	Auto Center Drive	60	61	61	1
R-97	Auto Center Drive	63	64	64	1
R-98	Auto Center Drive	61	62	63	2
R-99	Auto Center Drive	62	63	63	1
R-100	Auto Center Drive	54	55	55	1
R-101	Auto Center Drive	59	59	60	1
R-102	Auto Center Drive	58	59	59	1
R-103	Auto Center Drive	60	62	63	3
R-104	Auto Center Drive	55	56	57	2
R-105	Auto Center Drive	57	59	59	2
R-106	Auto Center Drive	65	**66**	**67**	2
R-107	Auto Center Drive	57	58	59	2
R-108	Auto Center Drive	56	57	57	1
R-109	Auto Center Drive	57	58	59	2
R-110	Auto Center Drive	58	60	62	4
R-111	Auto Center Drive	56	57	58	2
R-112	Auto Center Drive	60	62	64	4
R-113	Auto Center Drive	57	58	59	2
R-114	Auto Center Drive	54	56	56	2
R-115	Auto Center Drive	53	55	55	2
R-116	Auto Center Drive	55	56	57	2
R-117	Auto Center Drive	57	58	59	2
R-118	Auto Center Drive	60	62	64	4
R-119	Auto Center Drive	56	57	59	3
R-120	Auto Center Drive	59	61	63	4
R-121	Auto Center Drive	54	55	56	2
R-122	Auto Center Drive	56	58	60	4
R-123	Auto Center Drive	59	61	62	3
R-124	Auto Center Drive	59	61	62	3
R-125	Auto Center Drive	60	62	63	3
R-126	Auto Center Drive	53	55	55	2
R-127	Franklin Street	54	56	55	1
R-128	Avenue 6	48	49	48	0
R-129	Avenue 6	47	48	49	2
R-130	Avenue 6	47	49	50	3
R-131	Avenue 6	50	52	53	3
R-132	Stoney Creek Drive	63	64	65	2
R-133	Stoney Creek Drive	61	63	63	2
R-134	Stoney Creek Drive	62	63	63	1
R-135	Stoney Creek Drive	60	61	61	1
R-136	Stoney Creek Drive	53	55	55	2
R-137	Stoney Creek Drive	52	54	54	2
R-138	Sagecrest Drive	59	60	60	1
R-139	Sagecrest Drive	56	58	58	2
R-140	Sagecrest Drive	53	55	54	1

Table 2.16.K: Alternative 3 Predicted Future Noise Analysis (dBA L_{eq})

Receptor No.	Location	Existing Noise Level (dBA L_{eq}(h))	Future Noise Levels (dBA L_{eq}(h)) 2040 Noise Level		
			No Build	Build	Build Minus Existing Conditions
R-141	Sagecrest Drive	52	53	53	1
R-142	Canyon View Drive	61	63	63	2
R-143	Canyon View Drive	60	61	61	1
R-144	Canyon View Drive	53	54	55	2
R-145	Canyon View Drive	52	53	52	0
R-146	Grunder Drive	60	61	61	1
R-147	Grunder Drive	63	64	63	0
R-148	Grunder Drive	64	63	63	-1
R-149	Grunder Drive	63	64	68	5
R-150	East Franklin Street	60	62	58	-2
R-151	East Franklin Street	60	61	55	-5
R-152	East Franklin Street	56	57	58	2
R-153	East Franklin Street	64	65	60	-4
R-154	Rupard Street	57	58	56	-1
R-155	Rupard Street	60	60	--[4]	N/A
R-156	Flint Street	61	62	62	1
R-157	Adobe Street	63	63	63	0
R-158	East Hill Street	65	**66**	**66**	1
R-159	East Hill Street	64	65	**66**	2
R-160	Adobe Street	62	63	63	1
R-161	Adobe Street	61	62	62	1
R-162	East Hill Street	64	65	65	1
R-163	East Hill Street	61	62	63	2
R-164	Adobe Street	56	57	57	1
R-165	Adobe Street	56	56	56	0
R-166	Adobe Street	55	56	56	1
R-167	Adobe Street	57	58	58	1
R-168	East Hill Street	58	59	59	1
R-169	East Hill Street	61	62	64	3
R-170	East Hill Street	60	61	62	2
R-171	Granite Street	57	58	60	3
R-172	Granite Street	62	63	63	1
R-173	Lookout Drive	59	60	60	1
R-174	Lookout Drive	54	55	55	1
R-175	North Ellis Street	59	60	60	1
R-176	North Ellis Street	61	62	62	1
R-177	Granite Street	61	62	63	2
R-178	Granite Street	60	61	62	2
R-179	Lookout Drive	60	61	61	1
R-180	Lookout Drive	60	61	62	2
R-181	North Ellis Street	59	60	61	2
R-182	North Ellis Street	56	57	57	1
R-183	North Ellis Street	60	62	62	2
R-184	North Ellis Street	60	61	61	1
R-185	Minthorn Street	**67**	**68**	**71**	4

Table 2.16.K: Alternative 3 Predicted Future Noise Analysis (dBA L_{eq})

Receptor No.	Location	Existing Noise Level (dBA L_{eq}(h))	Future Noise Levels (dBA L_{eq}(h)) 2040 Noise Level		
			No Build	Build	Build Minus Existing Conditions
R-186	Minthorn Street	66	67	73	7
R-187	Minthorn Street	73	75	75	2

Source: *Noise Study Report* (August 2015).
[1] Exterior/interior noise level. The interior noise level was determined using a 20 dB exterior-to-interior noise level reduction.
[2] The shaded area represents receptors located beyond the limits of construction under Alternative 3. Traffic noise impacts were not assessed for these receptors.
[3] Numbers in **bold** represent noise levels that approach or exceed the NAC.
[4] This receptor would be fully acquired by the project under Alternative 3.
[5] Exterior/interior noise level. The interior noise level was determined using a 25 dB exterior-to-interior noise level reduction.

dB = decibels
dBA = A-weighted decibels
ft = foot/feet
L_{eq}(h) =1-hour A-weighted equivalent sound level
NAC = Noise Abatement Criteria
NB = Noise Barrier

Under the future with project conditions, of the modeled receptors, 9 receptors would approach or exceed the 67 dBA L_{eq} NAC. Of the modeled receptors, one of the sensitive receptors would approach or exceed the NAC under Activity Category C. The following receptor locations would be or would continue to be exposed to noise levels that approach or exceed the 67 dBA L_{eq} NAC under Alternative 3 traffic conditions:

- **Receptors R-17 and R-19:** These receptor locations represent existing residences along Lakeview Terrace on the west side of I-15 south of Railroad Canyon Road. Currently, there is an approximately 5 ft high earthen berm located along the edge of shoulder that partially shields these residences. NB No. 3-1 for Alternative 3, was modeled at the top of slope within the State right-of-way to shield these residences.
- **Receptors R-54 and R-55:** These receptor locations represent existing residences along Drexel Court on the east side of I-15 south of Railroad Canyon Road. Currently there is an 8 ft high combination masonry block wall and Plexiglas barrier along the property line to shield these residences. Two noise barrier locations were considered to shield the impacted receptors. Under the first scenario, EW No. 5 was modeled at its current location at heights greater than the existing wall and renamed as NB No. 3-2, for Alternative 3, to shield these residences. Under the second scenario, NB No. 3-2B for Alternative 3, was modeled along the edge of road on the west side of Grape Street to shield these residences.
- **Receptors R-94 and R-106:** These receptor locations represent existing residences and the playground along Auto Center Drive on the west side of I-15 between Railroad Canyon Road and Main Street. Currently, there is a 3 to 6 ft high wall along the property line to shield the playground and residences. Two noise barrier locations were considered to shield the impacted receptors. Under the first scenario, a portion of EW No. 8 was evaluated with an increased height at its current location and renamed as NB No. 3-3 for Alternative 3, to shield these residences. Under the second scenario, a smaller section of Wall No. 8 (EW No. 8) was modeled at its current location at heights greater than the existing wall in addition to a new segment of barrier located along the west side of I-15 southbound. Both segments of the barrier were combined to be named NB No. 3-3B for Alternative 3, to shield these residences and the playground.

- **Receptors R-158 and R-159:** These receptor locations represent existing residences along East Hill Street on the west side of I-15 south of Main Street. Currently, there are no existing walls that shield these residences. One noise barrier for Alternative 3 (NB No. 3-4) was modeled along the edge of shoulder to shield these residences.
- **Receptor R-185:** This receptor location represents an existing residence along Minthorn Street on the east side of I-15 south of Main Street. Currently there are no existing walls that shield this residence. One noise barrier for Alternative 3 (NB No. 3-5) was modeled along the edge of shoulder to shield this residence.

Under NEPA 23 CFR 772, the regulations contain NAC that are used to determine when a noise impact would occur. The noise level at these receptors is already approaching or exceeding the 67 dBA NAC. Approaching the NAC is defined as coming within 1 dBA of the NAC; therefore, noise abatement would need to be considered.

Long-Term Interior Noise Impacts

Similar to Alternative 2, the project area for Alternative 3 includes a church, school, and two medical facilities. To determine the attenuation provided by each of the buildings, simultaneous noise measurements were taken inside and outside a room at each building. The measured building attenuation was applied to the predicted future worst-case exterior level to obtain the predicted future interior noise level. According to the Traffic Noise Analysis Protocol, interior noise levels under Activity Category D must not approach or exceed 52 dBA L_{eq}(h). Table 2.16.L identifies the predicted traffic noise levels for buildings in the project area under Alternative 3.

Table 2.16.L: Alternative 3 Interior Noise Analysis

Receptor No.	Location	Future Noise Levels, dBA L_{eq}(h) 2040 Noise Level		
		Exterior (dBA L_{eq})	Interior (dBA L_{eq})	Exterior to Interior Noise Level Reduction
R-2	Church	58	38[1]	20
R-31	School	61	41[1]	20
R-73	Medical Facility	66	46[1]	20
R-86	Medical Facility	71	46[2]	25

Source: *Noise Study Report* (August 2015).

1 Exterior/interior noise level. The interior noise level was determined using a 20 dB exterior-to-interior noise level reduction.

2 Exterior/interior noise level. The interior noise level was determined using a 25 dB exterior-to-interior noise level reduction.

dBA = A-weighted decibels

L_{eq}(h) =1-hour A-weighted equivalent sound level

Based on these projected traffic noise levels, interior noise levels at all buildings under Alternative 3 traffic conditions would not approach or exceed 52 dBA L_{eq} NAC. Therefore, no noise abatement measures for these buildings are required.

Noise Abatement Consideration

Similar to Alternative 2, noise abatement measures, such as noise barriers, were considered to shield noise-sensitive receptors located along I-15 where sensitive receptors exist and would continue to be exposed to traffic noise levels approaching or exceeding the NAC under Alternative 3. Noise barriers were analyzed for each of these sensitive receptors. At each location, 6 noise barrier heights were analyzed: 6, 8, 10, 12, 14, and 16 ft. If noise barriers would be located within 15 ft of the nearest travel lane, a 16 ft noise barrier height was not analyzed. The following barriers were analyzed to shield the sensitive receptor locations that would be exposed to traffic noise levels approaching or exceeding the NAC under Alternative 3:

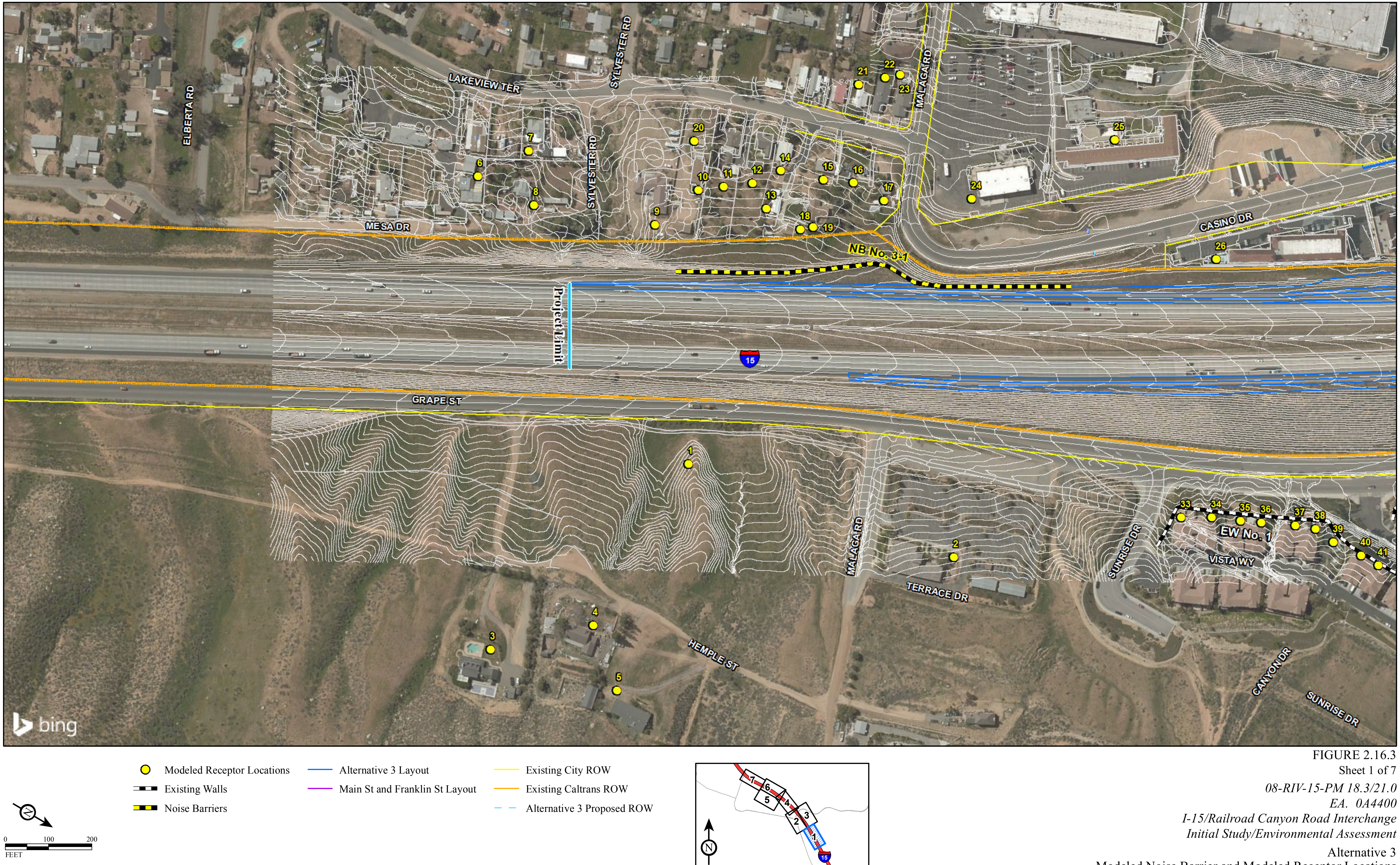
- **NB No. 3-1:** A 927 ft long barrier along the top of slope within the State right-of-way on the west side of I-15 south of Railroad Canyon Road was analyzed to shield Receptors R-17 and R-19.
- **NB No. 3-2:** A 200 ft long barrier along the property line on the east side of I-15 south of Railroad Canyon Road was analyzed to shield Receptors R-54 and R-55.
- **NB No. 3-2B:** As an alternative to NB No. 3-2, a 906 ft long barrier along the edge of shoulder on the west side of Grape Street was analyzed to shield Receptors R-54 and R-55.
- **NB No. 3-3:** A 929 ft long barrier along the property line on the west side of I-15 between Railroad Canyon Road and Main Street was analyzed to shield Receptors R-94 and R-106.
- **NB No. 3-3B:** As an alternative to NB No. 3-3, a two segment barrier that is 1,225 ft long combined on the west side of I-15 between Railroad Canyon Road and Main Street was analyzed to shield Receptors R-94 and R-106.
- **NB No. 3-4:** A 1,305 ft long barrier along the edge of shoulder on the west side of I-15 south of Main Street was analyzed to shield Receptors R-158 and R-159.
- **NB No. 3-5:** A 1,058 ft long barrier along the edge of shoulder on the east side of I-15 south of Main Street was analyzed to shield Receptor R-185

Figure 2.16.3 shows the analyzed noise barriers for Alternative 3. The results of the noise barrier modeling are provided in Tables 2.16.M and 2.16.N.

Noise Barrier Feasibility

A minimum noise reduction of 5 dBA must be achieved at an impacted receptor for the noise abatement measure to be considered feasible. The feasibility criterion is not necessarily a noise abatement design goal. Greater noise reductions are encouraged if they can be reasonably achieved. Feasibility may also be restricted by the following factors: (1) topography, (2) access requirements for driveways and ramps, (3) the presence of local cross streets, (4) utility conflicts, (5) other noise sources in the area, and (6) safety considerations.

This page intentionally left blank



SOURCE: Bing Maps, 2010; SC Engineering, 2014

I:\SAE1401\Reports\IS_EA\Fig2-16-3_ModNoiseBarrier_ReceptorLoc_Alt3.mxd (6/23/2017)

FIGURE 2.16.3

Sheet 1 of 7

08-RIV-15-PM 18.3/21.0

EA. 0A4400

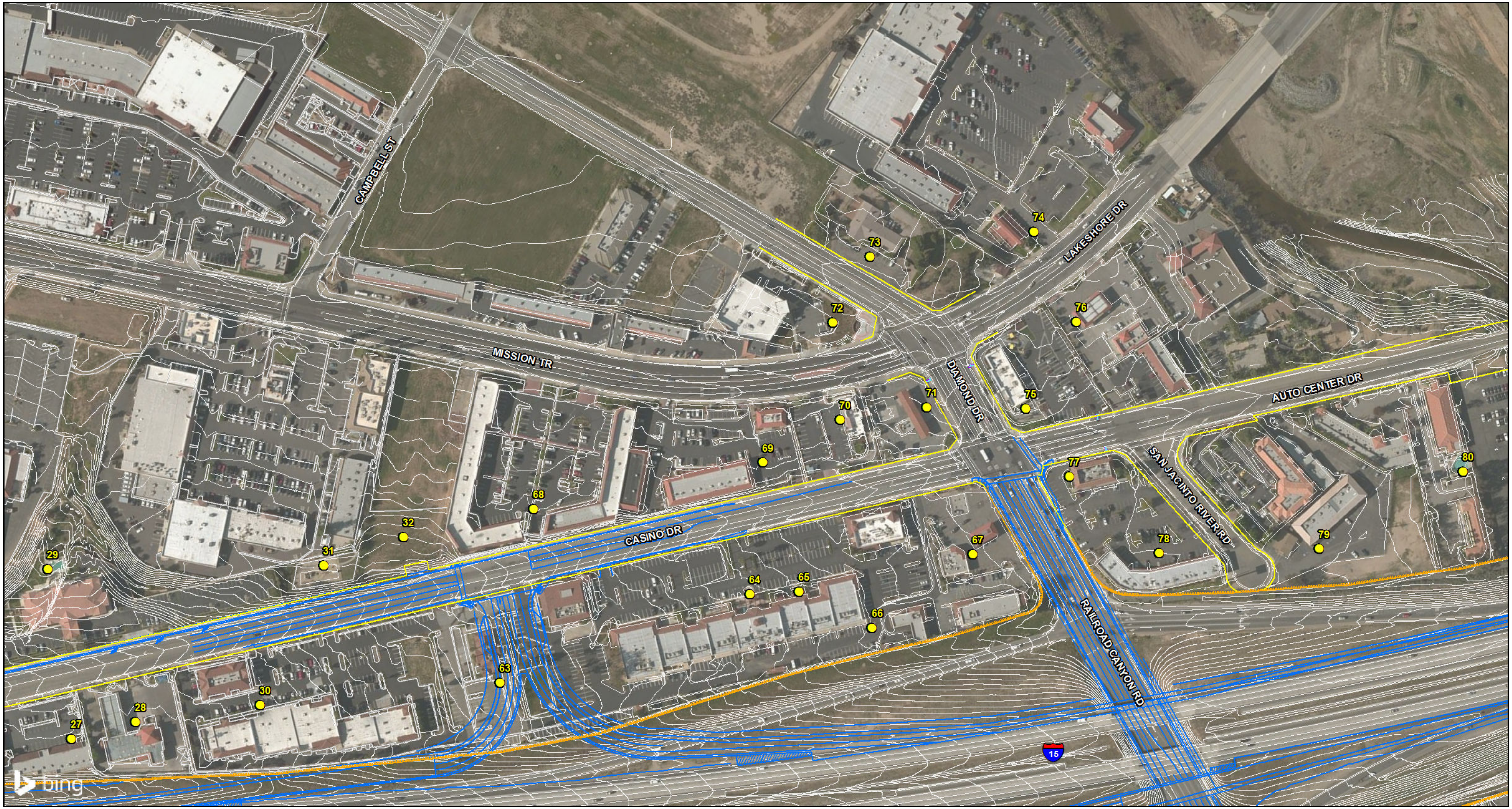
I-15/Railroad Canyon Road Interchange

Initial Study/Environmental Assessment

Alternative 3

Modeled Noise Barrier and Modeled Receptor Locations

This page intentionally left blank



- Modeled Receptor Locations
- Existing Walls
- Noise Barriers
- Alternative 3 Layout
- Main St and Franklin St Layout
- Existing City ROW
- Existing Caltrans ROW
- Alternative 3 Proposed ROW

0 100 200
FEET

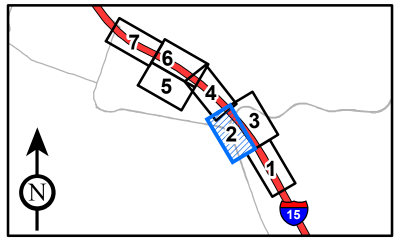


FIGURE 2.16.3
Sheet 2 of 7

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Alternative 3
Modeled Noise Barrier and Modeled Receptor Locations

SOURCE: Bing Maps, 2010; SC Engineering, 2014

I:\SAE1401\Reports\IS_EA\Fig2-16-3_ModNoiseBarrier_ReceptorLoc_Alt3.mxd (6/23/2017)

This page intentionally left blank

Modeled Receptor Locations
Existing Walls
Noise Barriers
Alternative 3 Layout
Main St and Franklin St Layout
Existing City ROW
Existing Caltrans ROW
Alternative 3 Proposed ROW

0 100 200
FEET

SOURCE: Bing Maps, 2010; SC Engineering, 2014

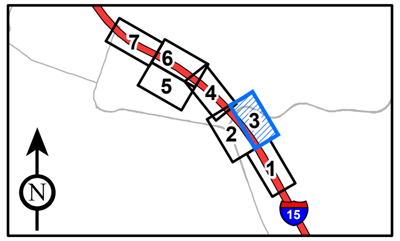
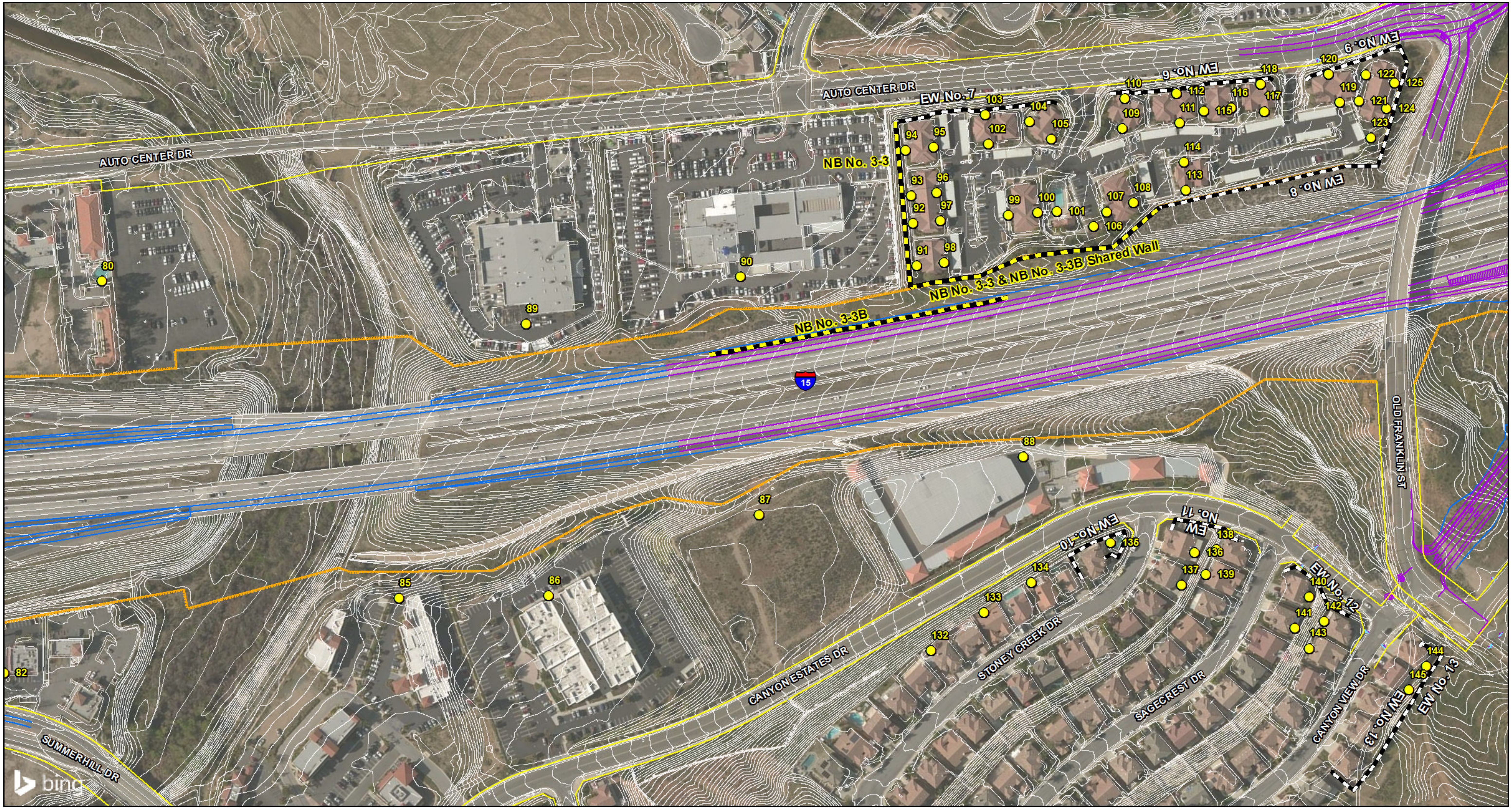


FIGURE 2.16.3
Sheet 3 of 7

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Alternative 3
Modeled Noise Barrier and Modeled Receptor Locations

This page intentionally left blank



Modeled Receptor Locations
Existing Walls
Noise Barriers
Alternative 3 Layout
Main St and Franklin St Layout
Existing City ROW
Existing Caltrans ROW
Alternative 3 Proposed ROW

0 100 200
FEET

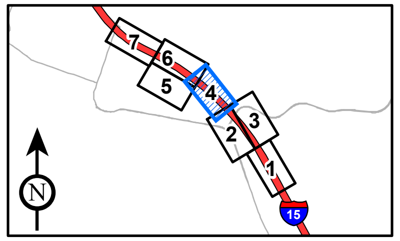


FIGURE 2.16.3
Sheet 4 of 7

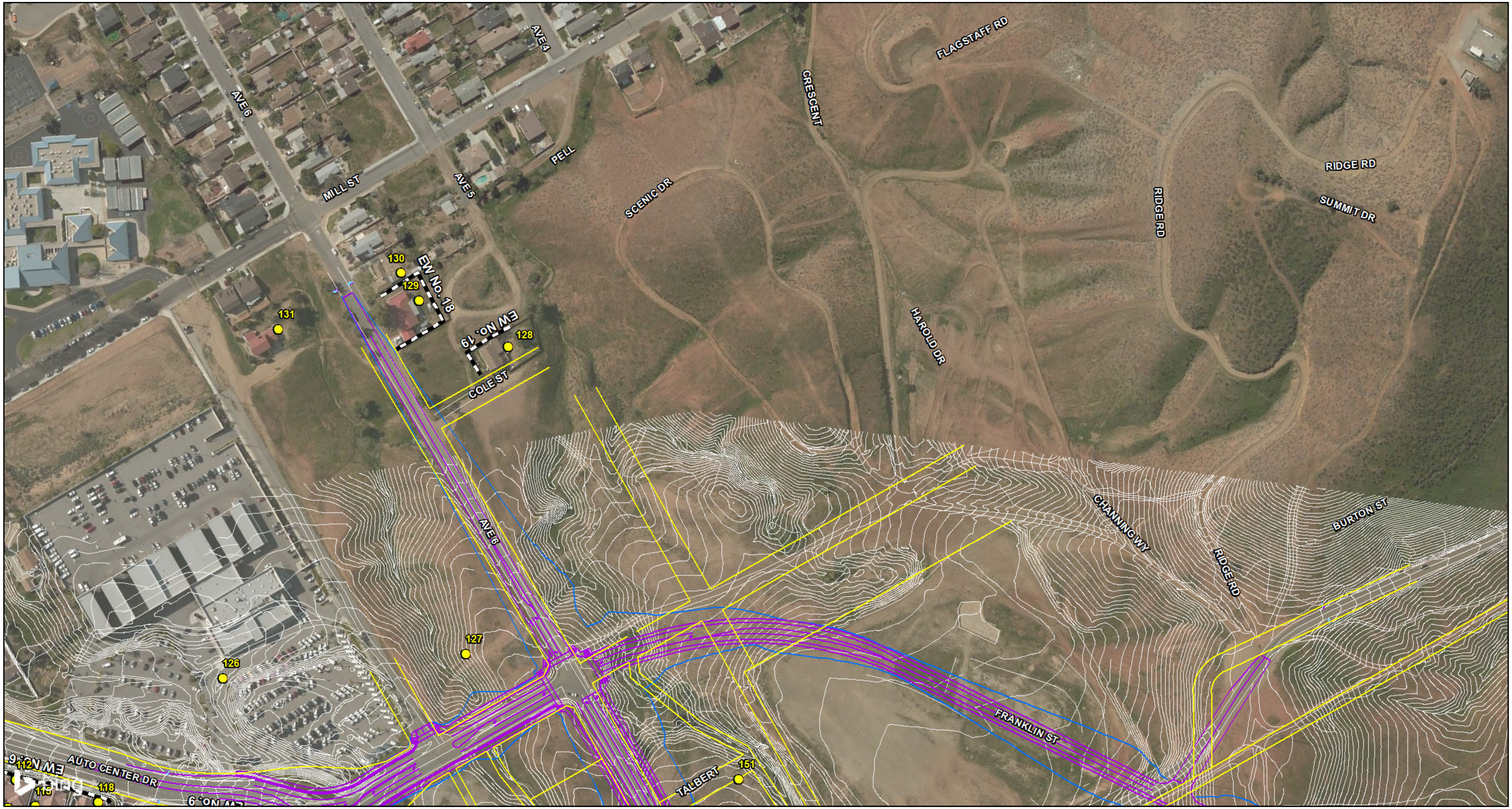
08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Alternative 3
Modeled Noise Barrier and Modeled Receptor Locations

SOURCE: Bing Maps, 2010; SC Engineering, 2014

I:\SAE1401\Reports\IS_EA\Fig2-16-3_ModNoiseBarrier_ReceptorLoc_Alt3.mxd (6/23/2017)

This page intentionally left blank



Modeled Receptor Locations
Existing Walls
Noise Barriers

Alternative 3 Layout
Main St and Franklin St Layout

Existing City ROW
Existing Caltrans ROW
Alternative 3 Proposed ROW

N

0 100 200
FEET

SOURCE: Bing Maps, 2010; SC Engineering, 2014

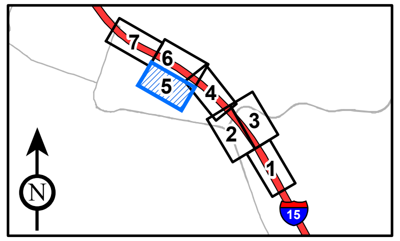
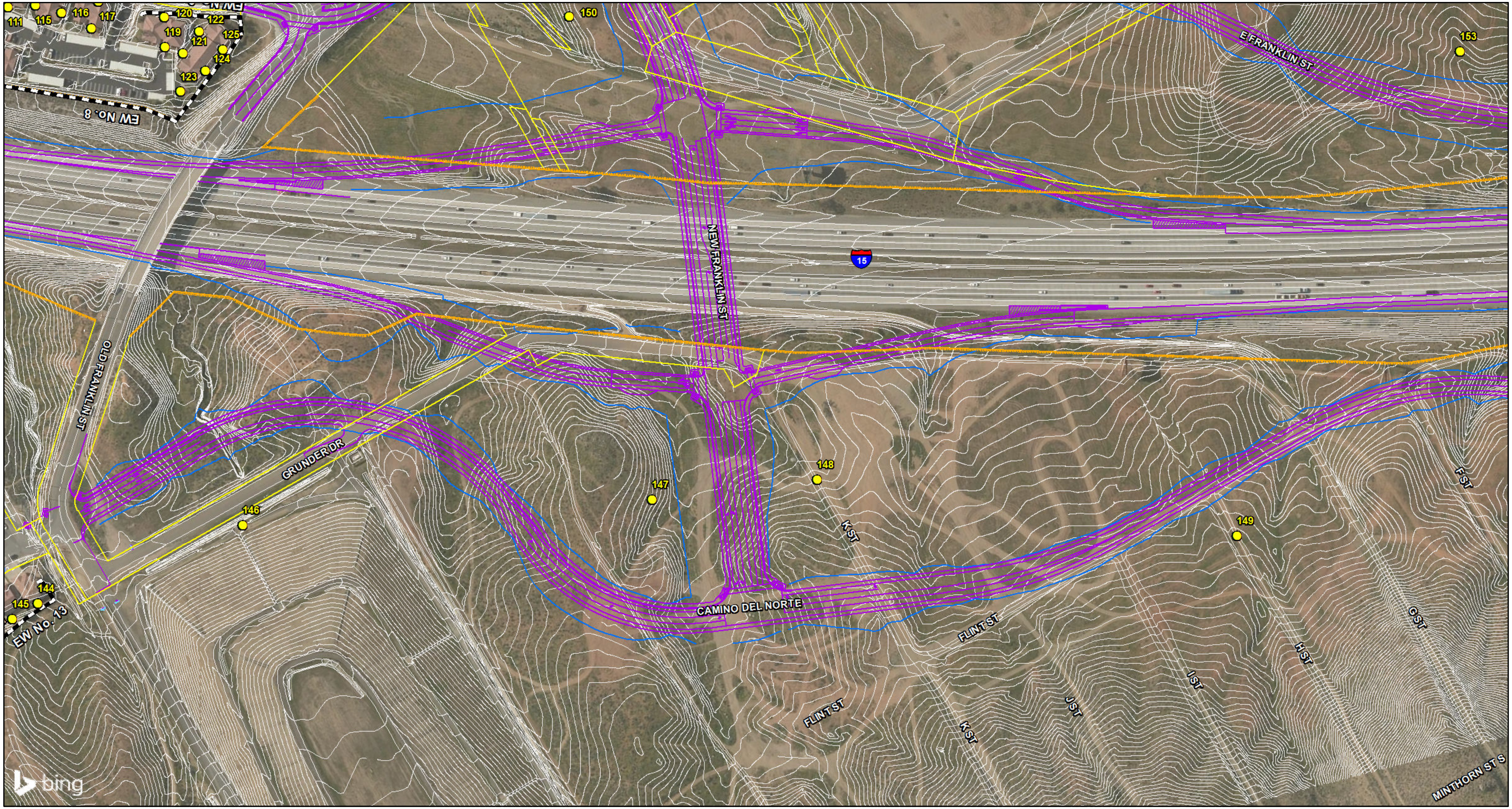


FIGURE 2.16.3
Sheet 5 of 7
08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Alternative 3
Modeled Noise Barrier and Modeled Receptor Locations

I:\SAE1401\Reports\IS_EA\Fig2-16-3_ModNoiseBarrier_ReceptorLoc_Alt3.mxd (6/23/2017)

This page intentionally left blank



Modeled Receptor Locations
Existing Walls
Noise Barriers
Alternative 3 Layout
Main St and Franklin St Layout
Existing City ROW
Existing Caltrans ROW
Alternative 3 Proposed ROW

0 100 200
FEET

SOURCE: Bing Maps, 2010; SC Engineering, 2014

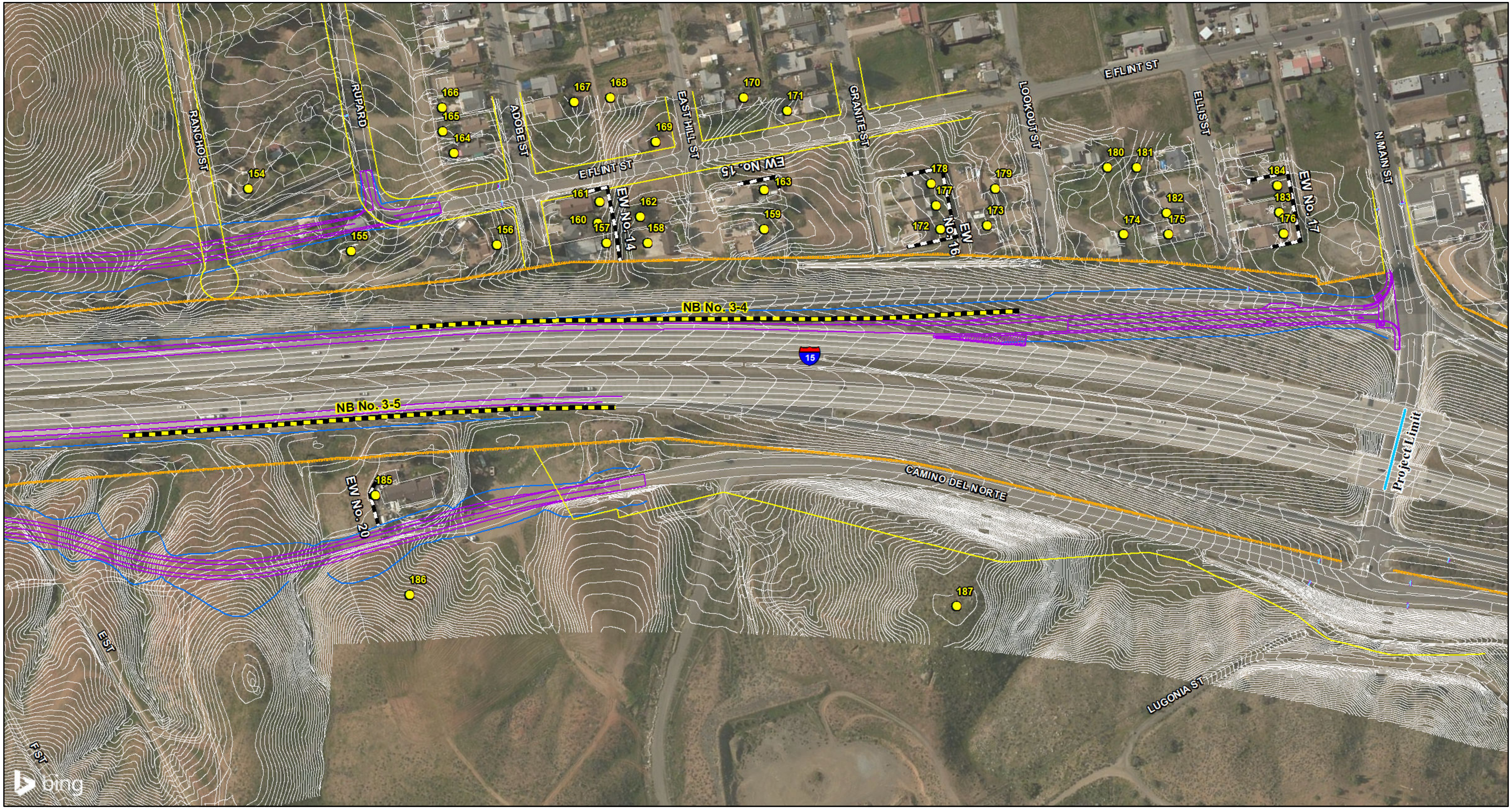
I:\SAE1401\Reports\IS_EA\Fig2-16-3_ModNoiseBarrier_ReceptorLoc_Alt3.mxd (6/23/2017)

FIGURE 2.16.3
Sheet 6 of 7

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Alternative 3
Modeled Noise Barrier and Modeled Receptor Locations

This page intentionally left blank



Modeled Receptor Locations

Existing Walls

Noise Barriers

Alternative 3 Layout

Main St and Franklin St Layout

Existing City ROW

Existing Caltrans ROW

Alternative 3 Proposed ROW

0 100 200
FEET

SOURCE: Bing Maps, 2010; SC Engineering, 2014

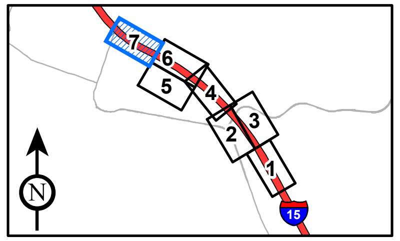


FIGURE 2.16.3
Sheet 7 of 7

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Alternative 3
Modeled Noise Barrier and Modeled Receptor Locations

I:\SAE1401\Reports\IS_EA\Fig2-16-3_ModNoiseBarrier_ReceptorLoc_Alt3.mxd (6/23/2017)

This page intentionally left blank

Table 2.16.M: Alternative 3 Noise Barrier Analysis (dBA L_{eq})

Receptor No.	NB No.	Future Noise Levels (dBA L_{eq}(h))																		
		2040 Noise Level	Noise Prediction with Barrier, Barrier I.L., and NBR																	
			6 ft			8 ft			10 ft			12 ft			14 ft			16 ft		
		Build	**L_{eq}(h)**	**I.L.[1]**	**NBR**	**L_{eq}(h)**	**I.L.**	**NBR**	**L_{eq}(h)**	**I.L.**	**NBR**	**L_{eq}(h)**	**I.L.**	**NBR**	**L_{eq}(h)**	**I.L.**	**NBR**	**L_{eq}(h)**	**I.L.**	**NBR**
R-1		66	--[2]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-2		58/58[3]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-3		56[4]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-4		58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-5		57	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-6		62[4]	62	0	0	62	0	0	62	0	0	62	0	0	62	0	0	62	0	0
R-7		61[4]	61	0	0	61	0	0	61	0	0	61	0	0	61	0	0	61	0	0
R-8		63[4]	63	0	0	63	0	0	63	0	0	63	0	0	63	0	0	63	0	0
R-9		64	64	0	0	64	0	0	63	1	0	63	1	0	63	1	0	63	1	0
R-10		62	61	1	0	60	2	0	60	2	0	60	2	0	60	2	0	60	2	0
R-11		62	61	1	0	61	1	0	61	1	0	60	2	0	60	2	0	60	2	0
R-12		63	61	2	0	61	2	0	61	2	0	60	3	0	60	3	0	60	3	0
R-13	3-1	64	62	2	0	61	3	0	61	3	0	60	4	0	60	4	0	60	4	0
R-14		62	61	1	0	61	1	0	60	2	0	60	2	0	60	2	0	60	2	0
R-15		63	62	1	0	62	1	0	61	2	0	61	2	0	60	3	0	60	3	0
R-16		65	63	2	0	63	2	0	62	3	0	62	3	0	61	4	0	61	4	0
R-17		**68**	**67**	1	0	**66**	2	0	**66**	2	0	65	3	0	65	3	0	65	3	0
R-18		65	63	2	0	62	3	0	62	3	0	61	4	0	61	4	0	60[6]	5	1
R-19		**66**	64	2	0	64	2	0	63	3	0	62	4	0	62	4	0	62	4	0
R-20		59	58	1	0	58	1	0	58	1	0	58	1	0	58	1	0	58	1	0
R-21		60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-22		62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-23		64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-24		70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-25		55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-26		66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-27		64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-28		64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-29		58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-30		62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-31		61/41[3]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-32		62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-33		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-34		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-35		62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 2.16.M: Alternative 3 Noise Barrier Analysis (dBA L_{eq})

Receptor No.	NB No.	Future Noise Levels (dBA L_{eq}(h))																		
		2040 Noise Level	Noise Prediction with Barrier, Barrier I.L., and NBR																	
			6 ft			8 ft			10 ft			12 ft			14 ft			16 ft		
		Build	L_{eq}(h)	I.L.[1]	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR
R-36		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-37		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-38		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-39		60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-40		58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-41		57	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-42		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-43		60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-44		57	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-45		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-46		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-47		63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-48		59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-49		58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-50		58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-51		63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-52		62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-53		59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-54	3-2	**67**	--[7]	--	--	--	--	--	65	2	0	65	2	0	63	4	0	62[8]	5	2
R-55		**66**	--	--	--	--	--	--	65	1	0	64	2	0	63	3	0	62	4	0
R-56		59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-57		60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-58		73	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-59		67	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-60		69	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-61		64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-62		68	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-63		--[11]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-64		60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-65		59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-66		65	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-67		66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-68		60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-69		65	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-70		66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 2.16.M: Alternative 3 Noise Barrier Analysis (dBA L_{eq})

Receptor No.	NB No.	Future Noise Levels (dBA L_{eq}(h))																			
		2040 Noise Level	Noise Prediction with Barrier, Barrier I.L., and NBR																		
			6 ft			8 ft			10 ft			12 ft			14 ft			16 ft			
		Build	L_{eq}(h)	I.L.[1]	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	
R-71		71	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
R-72		69	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
R-73		66/46[3]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
R-74		68	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
R-75		69	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
R-76		67	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
R-77		68	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
R-78		62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
R-79		69	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
R-80		66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
R-81		67	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
R-82		68	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
R-83		70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
R-84		74	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
R-85		70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
R-86		71/46[10]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
R-87		75	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
R-88		70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
R-89		75	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
R-90		76	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
R-91		63	63	0	0	60	3	0	58	5	2	56	7	2	56	7	2	55	8	2	
R-92		65	65	0	0	63	2	0	62	3	0	61	4	0	60	5	2	59	6	2	
R-93		64	64	0	0	62	2	0	61	3	0	60	4	0	59	5	2	58	6	2	
R-94		**68**	64	4	0	61	7	2	60	8	2	58	10	2	57	11	2	57	11	2	
R-95		59	59	0	0	58	1	0	58	1	0	57	2	0	57	2	0	57	2	0	
R-96		61	61	0	0	60	1	0	59	2	0	59	2	0	58	3	0	58	3	0	
R-97		64	64	0	0	62	2	0	62	2	0	61	3	0	60	4	0	60	4	0	
R-98	3-3	63	63	0	0	61	2	0	59	4	0	57	6	2	57	6	2	56	7	2	
R-99		63	63	0	0	62	1	0	61	2	0	61	2	0	60	3	0	59	4	0	
R-100		55	55	0	0	55	0	0	55	0	0	54	1	0	54	1	0	54	1	0	
R-101		60	60	0	0	59	1	0	58	2	0	58	2	0	57	3	0	56	4	0	
R-102		59	59	0	0	59	0	0	58	1	0	58	1	0	58	1	0	57	2	0	
R-103		63	63	0	0	63	0	0	63	0	0	63	0	0	63	0	0	63	0	0	
R-104		57	57	0	0	57	0	0	57	0	0	57	0	0	57	0	0	57	0	0	
R-105		59	59	0	0	59	0	0	59	0	0	58	1	0	58	1	0	58	1	0	

Table 2.16.M: Alternative 3 Noise Barrier Analysis (dBA L_{eq})

Receptor No.	NB No.	Future Noise Levels (dBA L_{eq}(h))																		
		2040 Noise Level	Noise Prediction with Barrier, Barrier I.L., and NBR																	
			6 ft			8 ft			10 ft			12 ft			14 ft			16 ft		
		Build	L_{eq}(h)	I.L.[1]	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR
R-106	3-3	**67**	**67**	0	0	**66**	1	0	65	2	0	64	3	0	63	4	0	63	4	0
R-107		59	59	0	0	57	2	0	56	3	0	56	3	0	55	4	0	55	4	0
R-108		57	57	0	0	57	0	0	57	0	0	57	0	0	57	0	0	57	0	0
R-109		59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-110		62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-111		58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-112		64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-113		59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-114		56	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-115		55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-116		57	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-117		59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-118		64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-119		59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-120		63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-121		56	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-122		60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-123		62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-124		62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-125		63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-126		55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-127		55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-128		48	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-129		49	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-130		50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-131		53	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-132		65	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-133		63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-134		63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-135		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-136		55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-137		54	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-138		60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-139		58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-140		54	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-141		53	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-142		63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 2.16.M: Alternative 3 Noise Barrier Analysis (dBA L_{eq})

Receptor No.	NB No.	Future Noise Levels (dBA L_{eq}(h))																		
		2040 Noise Level	Noise Prediction with Barrier, Barrier I.L., and NBR																	
			6 ft			8 ft			10 ft			12 ft			14 ft			16 ft		
		Build	L_{eq}(h)	I.L.[1]	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR
R-143		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-144		55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-145		52	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-146		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-147		63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-148		63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-149		68	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-150		58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-151		55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-152		58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-153		60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-154		56	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-155		--[9]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-156	3-4	62	61	1	0	58	4	0	57	5	1	57	5	1	56	6	1	NP[11]	NP	0
R-157		63	61	2	0	60	3	0	59	4	0	58	5	1	57	6	1	NP	NP	0
R-158		**66**	65	1	0	64	2	0	61	5	1	60	6	1	59	7	1	NP	NP	0
R-159		**66**	64	2	0	64	2	0	62	4	0	61	5	1	60	6	1	NP	NP	0
R-160		63	61	2	0	59	4	0	59	4	0	58	5	1	58	5	1	NP	NP	0
R-161		62	61	1	0	59	3	0	58	4	0	58	4	0	57	5	1	NP	NP	0
R-162		65	63	2	0	63	2	0	61	4	0	60	5	1	59	6	1	NP	NP	0
R-163		63	62	1	0	62	1	0	61	2	0	60	3	0	59	4	0	NP	NP	0
R-164		57	56	1	0	55	2	0	54	3	0	54	3	0	53	4	0	NP	NP	0
R-165		56	56	0	0	54	2	0	53	3	0	53	3	0	53	3	0	NP	NP	0
R-166		56	55	1	0	54	2	0	53	3	0	52	4	0	52	4	0	NP	NP	0
R-167		58	57	1	0	55	3	0	54	4	0	54	4	0	54	4	0	NP	NP	0
R-168		59	58	1	0	57	2	0	56	3	0	55	4	0	55	4	0	NP	NP	0
R-169		64	62	2	0	62	2	0	61	3	0	60	4	0	60	4	0	NP	NP	0
R-170		62	61	1	0	61	1	0	60	2	0	60	2	0	59	3	0	NP	NP	0
R-171		60	60	0	0	60	0	0	59	1	0	59	1	0	59	1	0	NP	NP	0
R-172		63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-173		60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-174		55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-175		60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-176		62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-177		63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-178		62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-179		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 2.16.M: Alternative 3 Noise Barrier Analysis (dBA L_{eq})

Receptor No.	NB No.	Future Noise Levels (dBA L_{eq}(h))																		
		2040 Noise Level	Noise Prediction with Barrier, Barrier I.L., and NBR																	
			6 ft			8 ft			10 ft			12 ft			14 ft			16 ft		
		Build	L_{eq}(h)	I.L.[1]	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR	L_{eq}(h)	I.L.	NBR
R-180		62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-181		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-182		57	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-183		62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-184		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-185	3-5	**71**	70	1	0	70	1	0	70	1	0	68	3	0	68	3	0	NP	NP	0
R-186		73	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-187		75	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Source: *Noise Study Report* (August 2015).

1 I.L.: Insertion Loss.
2 Either no barrier was analyzed at this location because the modeled receptor would not approach or exceed the NAC or this receptor would be acquired under this alternative.
3 Exterior/interior noise level. The interior noise level was determined using a 20 dB exterior-to-interior noise level reduction.
4 The shaded area represents receptors located beyond the limits of construction under Alternative 3. Traffic noise impacts were not assessed for these receptors.
5 Numbers in **bold** represent noise levels that approach or exceed the NAC.
6 Although a noise level reduction of 5 dBA or more can be achieved, this noise barrier is not considered feasible because it does not attenuate noise levels by at least 5 dBA at the impacted receptor.
7 Shaded area represents the existing wall height.
8 Underlined noise levels have been attenuated by at least 5 dBA (i.e., feasible barrier height).
9 This receptor would be fully acquired by the project under Alternative 3.
10 Exterior/interior noise level. The interior noise level was determined using a 25 dB exterior-to-interior noise level reduction.
11 NP = Not Permitted. Noise barriers within 15 ft of the nearest travel lane are not permitted to exceed 14 ft in height.

dB = decibels
dBA = A-weighted decibels
ft = foot/feet
L_{eq}(h) =1-hour A-weighted equivalent sound level
NAC = Noise Abatement Criteria
NB = Noise Barrier

Table 2.16.N: Alternative 3 Noise Barrier Analysis (dBA L_{eq})

Receptor No.	NB No.	Future Noise Levels (dBA Leq(h))																			
		2040 Noise Level	Noise Prediction with Barrier, Barrier I.L., and NBR																		
			6 ft			8 ft			10 ft			12 ft			14 ft			16 ft			
		Build	Leq(h)	I.L.[1]	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	
R-54	3-2B	**67**[2]	**66**	1	0	**66**	1	0	65	2	0	65	2	0	65	2	0	NP[3]	NP	0	
R-55	3-2B	**66**	65	1	0	64	2	0	63	3	0	63	3	0	62	4	0	NP	NP	0	
R-91	3-3B	63	63	0	0	62	1	0	61	2	2	60	3	0	59	4	0	59	4	0	
R-92	3-3B	65	65	0	0	64	1	0	63	2	0	63	2	0	62	3	0	61	4	0	
R-93	3-3B	64	63	1	0	62	2	0	62	2	0	62	2	0	61	3	0	61	3	0	
R-94	3-3B	**68**	**67**	1	0	**67**	1	0	**66**	2	0	**66**	2	0	65	3	0	65	3	0	
R-95	3-3B	59	58	1	0	58	1	0	57	2	0	57	2	0	57	2	0	56	3	0	
R-96	3-3B	61	61	0	0	59	2	0	59	2	0	58	3	0	57	4	0	57	4	0	
R-97	3-3B	64	64	0	0	62	2	0	61	3	0	60	4	0	59[4]	5	2	59[4]	5	2	
R-98	3-3B	63	63	0	0	61	2	0	59	4	0	58[4]	5	2	57[4]	6	2	57[4]	6	2	
R-99	3-3B	63	63	0	0	62	1	0	61	2	0	60	3	0	59	4	0	59	4	0	
R-100	3-3B	55	55	0	0	55	0	0	55	0	0	54	1	0	54	1	0	54	1	0	
R-101	3-3B	60	60	0	0	59	1	0	58	2	0	57	3	0	56	4	0	55[4]	5	2	
R-102	3-3B	59	59	0	0	59	0	0	59	0	0	58	1	0	58	1	0	58	1	0	
R-103	3-3B	63	63	0	0	63	0	0	63	0	0	63	0	0	63	0	0	63	0	0	
R-104	3-3B	57	57	0	0	57	0	0	57	0	0	57	0	0	57	0	0	56	1	0	
R-105	3-3B	59	59	0	0	59	0	0	59	0	0	58	1	0	58	1	0	58	1	0	
R-106	3-3B	**67**	**67**	0	0	**66**	1	0	65	2	0	64	3	0	63	4	0	63	4	0	
R-107	3-3B	59	59	0	0	57	2	0	56	3	0	56	3	0	55	4	0	55	4	0	
R-108	3-3B	57	57	0	0	57	0	0	57	0	0	57	0	0	57	0	0	57	0	0	

Source: *Noise Study Report* (August 2015).

1 I.L.: Insertion Loss.

2 Numbers in bold represent noise levels that approach or exceed the NAC.

3 NP = Not Permitted. Noise barriers within 15 ft of the nearest travel lane are not permitted to exceed 14 ft in height.

4 Although a noise level reduction of 5 dBA or more can be achieved, this noise barrier is not considered feasible because it does not attenuate noise levels by at least 5 dBA at the impacted receptor.

dB = decibels
dBA = A-weighted decibels
ft = foot/feet
L_{eq}(h) =1-hour A-weighted equivalent sound level
NAC = Noise Abatement Criteria
NB = Noise Barrier
NBR = Number of Benefited Receptors

Of the seven modeled noise barriers evaluated under Alternative 3, three noise barriers were capable of reducing noise levels by 5 dBA or more, as required to be considered feasible. NB Nos. 3-1, 3-2B, 3-3B, and 3-5 were determined to not be feasible because the barriers would not reduce noise levels by 5 dBA or more. Table 2.16.O lists all the feasible noise barriers for Alternative 3.

Table 2.16.O: Alternative 3 Feasible Noise Barriers

Noise Barrier No.	Height (ft)	Approximate Length (ft)	Receptor Locations Benefited	Number of Benefited Units[1]
3-2	16[2]	200	R-54	2
3-3	8[2]	929	R-94	2
	10	929	R-91, R-94	4
	12	929	R-91, R-94, R-98	6
	14	929	R-91 to R-94, R-98	10
	16	929	R-91 to R-94, R-98	10
3-4	10	1,305	R-156, R-158	2
	12[2]	1,305	R-156 to R-160, R-162	6
	14	1,305	R-156 to R-162	7

Source: *Noise Study Report* (August 2015).
[1] Number of units that are attenuated by 5 dBA or more by the modeled barrier.
[2] Denotes the minimum wall height required to break the line-of-sight between the receptor and the truck exhaust stack.
ft = foot/feet

Noise Barrier Reasonableness

The reasonableness of a noise barrier was determined by comparing the estimated construction cost of the noise barrier against the total reasonable allowance. As identified in Table 2.16.P, the total reasonable allowance was determined based on the number of benefited residences multiplied by the reasonable allowance per residence. If the estimated noise barrier construction cost exceeds the total reasonable allowance, the noise barrier is determined to be not reasonable. However, if the estimated noise barrier construction cost is within the total reasonable allowance, the noise barrier is determined to be reasonable. As indicated in Table 2.16.P, none of the feasible noise barriers were determined to be reasonable because the estimated noise barrier construction cost exceeded the total reasonable allowance.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

Similar to Alternative 2, the project as proposed under Alternative 4 is considered a Type 1 project because it would alter the vertical and horizontal alignment of Railroad Canyon Road, the I-15 on- and off- ramps at Railroad Canyon Road and Main Street, and add a new overcrossing at Franklin Street. Potential long-term noise associated with project operations under this alternative would be solely from traffic noise.

Table 2.16.Q provides the existing and future worst-case traffic noise level results for Alternative 4.

Table 2.16.P: Alternative 3 Summary of Abatement Information

Noise Barrier No.	Height (ft)	Approximate Length (ft)	Receptor Locations Benefited	Noise Attenuation Range (dBA)	Number of Benefitted Units[1]	Reasonable Allowance per Benefited Unit	Total Reasonable Allowance	Estimated Noise Barrier Construction Cost[2]	Reasonable?
3-2	16[3]	200	R-54	5	2	$71,000	$142,000	--[4]	No
3-3	8[3]	929	R-94	7	2	$71,000	$142,000	$800,000	No
	10	929	R-91, R-94	5–8	4	$71,000	$248,000	$853,000	No
	12	929	R-91, R-94, R-98	6-10	6	$71,000	$426,000	$909,000	No
	14	929	R-91 to R-94, R-98	5-11	10	$71,000	$710,000	$966,000	No
	16	929	R-91 to R-94, R-98	6-11	10	$71,000	$710,000	$1,027,000	No
3-4	10	1,305	R-156, R-158	5	2	$71,000	$142,000	--[4]	No
	12[3]	1,305	R-156 to R-160, R-162	5–6	6	$71,000	$426,000	--[4]	No
	14	1,305	R-156 to R-162	5–7	7	$71,000	$497,000	$854,000	No

Source: *Noise Abatement Decision Report* (December 2015).
[1] Number of units that are attenuated 5 dBA or more by the modeled barrier.
[2] Noise barrier construction cost information provided by SC Engineering.
[3] Denotes the minimum wall height required to break the line-of-sight between the receptor and the truck exhaust stack.
[4] Noise barrier height was determined to be not reasonable because the barrier would not achieve at least a noise level reduction of 7 dBA at one or more benefited receptors.
dBA = A-weighted decibels
ft = foot/feet

Table 2.16.Q: Alternative 4 Predicted Future Noise Analysis (dBA L_{eq})

Receptor No.	Location	Existing Noise Level dBA L_{eq}(h)	Future Noise Levels, L_{eq}(h) 2040 Noise Level		
			No Build	Build	Build Minus Existing Conditions
R-1	Grape Street	--[1]	--[1]	--[1]	N/A
R-2	Grape Street	57/37[3]	58/38[3]	58/38[3]	1
R-3	Grape Street	--[1]	--[1]	--[1]	N/A
R-4	Grape Street	--[1]	--[1]	--[1]	N/A
R-5	Grape Street	--[1]	--[1]	--[1]	N/A
R-6	Mesa Drive	--[1]	--[1]	--[1]	N/A
R-7	Lakeview Terrace	--[1]	--[1]	--[1]	N/A
R-8	Sylvester Road	--[1]	--[1]	--[1]	N/A
R-9	Lakeview Terrace	--[1]	--[1]	--[1]	N/A
R-10	Lakeview Terrace	--[1]	--[1]	--[1]	N/A
R-11	Lakeview Terrace	--[1]	--[1]	--[1]	N/A
R-12	Lakeview Terrace	--[1]	--[1]	--[1]	N/A
R-13	Lakeview Terrace	--[1]	--[1]	--[1]	N/A
R-14	Lakeview Terrace	--[1]	--[1]	--[1]	N/A
R-15	Lakeview Terrace	--[1]	--[1]	--[1]	N/A
R-16	Lakeview Terrace	--[1]	--[1]	--[1]	N/A
R-17	Lakeview Terrace	--[1]	--[1]	--[1]	N/A
R-18	Lakeview Terrace	--[1]	--[1]	--[1]	N/A
R-19	Lakeview Terrace	--[1]	--[1]	--[1]	N/A
R-20	Lakeview Terrace	--[1]	--[1]	--[1]	N/A
R-21	Lakeview Terrace	--[1]	--[1]	--[1]	N/A
R-22	Lakeview Terrace	--[1]	--[1]	--[1]	N/A
R-23	Lakeview Terrace	--[1]	--[1]	--[1]	N/A
R-24	Malaga Road	68	69	70	2
R-25	Casino Drive	54	55	55	1
R-26	Casino Drive	64	65	66	2
R-27	Casino Drive	62	64	64	2
R-28	Casino Drive	62	63	63	1
R-29	Casino Drive	56	58	58	2
R-30	Casino Drive	60	62	61	1
R-31	Mission Trail	59/39[3]	61/41[3]	61/41[3]	2
R-32	Casino Drive	60	62	61	1
R-33	Vista Way	59	61	61	2
R-34	Vista Way	60	61	61	1
R-35	Vista Way	60	61	61	1
R-36	Vista Way	60	61	61	1
R-37	Vista Way	60	61	61	1
R-38	Vista Way	59	61	61	2
R-39	Vista Way	58	60	60	2
R-40	Vista Way	56	58	58	2
R-41	Vista Way	55	56	56	1
R-42	Boulder Road	60	61	61	1
R-43	Boulder Road	58	60	60	2
R-44	Boulder Road	56	57	57	1
R-45	Boulder Road	59	61	61	2
R-46	Park Point	59	61	61	2
R-47	Park Point	61	63	63	2
R-48	Park Point	57	59	59	2
R-49	Park Point	57	58	58	1
R-50	Park Point	57	58	58	1
R-51	Oak Tree	61	62	63	2
R-52	Oak Tree	60	61	62	2
R-53	Oak Tree	58	59	59	1
R-54	Drexel Court	65	**67**[4]	**67**	2

Table 2.16.Q: Alternative 4 Predicted Future Noise Analysis (dBA L_{eq})

Receptor No.	Location	Existing Noise Level dBA L_{eq}(h)	Future Noise Levels, L_{eq}(h) 2040 Noise Level		
			No Build	Build	Build Minus Existing Conditions
R-55	Drexel Court	64	65	**66**	2
R-56	Grape Street	58	59	59	1
R-57	Grape Street	59	61	61	2
R-58	Grape Street	71	74	74	3
R-59	Grape Street	66	68	68	2
R-60	Grape Street	68	70	70	2
R-61	Grape Street	62	66	65	3
R-62	Railroad Canyon Road	66	69	69	3
R-63	Casino Drive	65	67	67	2
R-64	Casino Drive	58	60	60	2
R-65	Casino Drive	57	59	59	2
R-66	Casino Drive	65	67	67	2
R-67	Diamond Drive	64	66	66	2
R-68	Mission Trail	58	59	59	1
R-69	Mission Trail	63	65	64	1
R-70	Mission Trail	64	66	66	2
R-71	Mission Trail	69	71	71	2
R-72	Diamond Drive	68	69	69	1
R-73	Diamond Drive	65/45[2]	66/46[2]	66/46[2]	1
R-74	East Lakeshore Drive	66	68	68	2
R-75	Railroad Canyon Road	68	70	69	1
R-76	East Lakeshore Drive	65	67	66	1
R-77	Diamond Drive	67	69	68	1
R-78	Diamond Drive	60	62	62	2
R-79	Auto Center Drive	67	69	69	2
R-80	Auto Center Drive	64	65	65	1
R-81	Railroad Canyon Road	66	68	66	0
R-82	Summerhill Drive	67	70	70	3
R-83	Railroad Canyon Road	68	71	70	2
R-84	Railroad Canyon Road	72	74	74	2
R-85	Canyon Estates Drive	70	70	70	0
R-86	Canyon Estates Drive	69/44[5]	70/45[5]	71/46[5]	2
R-87	Canyon Estates Drive	72	73	75	3
R-88	Canyon Estates Drive	68	69	70	2
R-89	Auto Center Drive	74	75	76	2
R-90	Auto Center Drive	73	73	76	3
R-91	Auto Center Drive	62	63	63	1
R-92	Auto Center Drive	64	65	**66**	2
R-93	Auto Center Drive	62	63	64	2
R-94	Auto Center Drive	**66**	**66**	**68**	2
R-95	Auto Center Drive	57	58	58	1
R-96	Auto Center Drive	60	61	61	1
R-97	Auto Center Drive	63	64	64	1
R-98	Auto Center Drive	61	62	63	2
R-99	Auto Center Drive	62	63	63	1
R-100	Auto Center Drive	54	55	55	1
R-101	Auto Center Drive	59	59	60	1
R-102	Auto Center Drive	58	59	60	2
R-103	Auto Center Drive	60	62	63	3
R-104	Auto Center Drive	55	56	57	2
R-105	Auto Center Drive	57	59	59	2
R-106	Auto Center Drive	65	**66**	**67**	2
R-107	Auto Center Drive	57	58	59	2
R-108	Auto Center Drive	56	57	57	1

Table 2.16.Q: Alternative 4 Predicted Future Noise Analysis (dBA L_{eq})

Receptor No.	Location	Existing Noise Level dBA L_{eq}(h)	Future Noise Levels, L_{eq}(h) 2040 Noise Level		
			No Build	Build	Build Minus Existing Conditions
R-109	Auto Center Drive	57	58	59	2
R-110	Auto Center Drive	58	60	62	4
R-111	Auto Center Drive	56	57	58	2
R-112	Auto Center Drive	60	62	64	4
R-113	Auto Center Drive	57	58	59	2
R-114	Auto Center Drive	54	56	56	2
R-115	Auto Center Drive	53	55	55	2
R-116	Auto Center Drive	55	56	57	2
R-117	Auto Center Drive	57	58	58	1
R-118	Auto Center Drive	60	62	64	4
R-119	Auto Center Drive	56	57	57	1
R-120	Auto Center Drive	59	61	63	4
R-121	Auto Center Drive	54	55	56	2
R-122	Auto Center Drive	56	58	60	4
R-123	Auto Center Drive	59	61	60	1
R-124	Auto Center Drive	59	61	60	1
R-125	Auto Center Drive	60	62	62	2
R-126	Auto Center Drive	53	55	55	2
R-127	Franklin Street	54	56	55	1
R-128	Avenue 6	48	49	48	0
R-129	Avenue 6	47	48	49	2
R-130	Avenue 6	47	49	50	3
R-131	Avenue 6	50	52	53	3
R-132	Stoney Creek Drive	63	64	65	2
R-133	Stoney Creek Drive	61	63	63	2
R-134	Stoney Creek Drive	62	63	63	1
R-135	Stoney Creek Drive	60	61	61	1
R-136	Stoney Creek Drive	53	55	55	2
R-137	Stoney Creek Drive	52	54	54	2
R-138	Sagecrest Drive	59	60	60	1
R-139	Sagecrest Drive	56	58	58	2
R-140	Sagecrest Drive	53	55	54	1
R-141	Sagecrest Drive	52	53	53	1
R-142	Canyon View Drive	61	63	63	2
R-143	Canyon View Drive	60	61	61	1
R-144	Canyon View Drive	53	54	55	2
R-145	Canyon View Drive	52	53	52	0
R-146	Grunder Drive	60	61	61	1
R-147	Grunder Drive	63	64	63	0
R-148	Grunder Drive	64	63	63	-1
R-149	Grunder Drive	63	64	66	3
R-150	East Franklin Street	60	62	58	-2
R-151	East Franklin Street	60	61	55	-5
R-152	East Franklin Street	56	57	58	2
R-153	East Franklin Street	64	65	60	-4
R-154	Rupard Street	57	58	56	-1
R-155	Rupard Street	60	60	--[6]	N/A
R-156	Flint Street	61	62	62	1
R-157	Adobe Street	63	63	63	0
R-158	East Hill Street	65	**66**	**66**	1
R-159	East Hill Street	64	65	**67**	3
R-160	Adobe Street	62	63	63	1
R-161	Adobe Street	61	62	62	1
R-162	East Hill Street	64	65	65	1
R-163	East Hill Street	61	62	63	2
R-164	Adobe Street	56	57	57	1

Table 2.16.Q: Alternative 4 Predicted Future Noise Analysis (dBA L_{eq})

Receptor No.	Location	Existing Noise Level dBA L_{eq}(h)	Future Noise Levels, L_{eq}(h) 2040 Noise Level		
			No Build	Build	Build Minus Existing Conditions
R-165	Adobe Street	56	56	56	0
R-166	Adobe Street	55	56	56	1
R-167	Adobe Street	57	58	58	1
R-168	East Hill Street	58	59	59	1
R-169	East Hill Street	61	62	64	3
R-170	East Hill Street	60	61	62	2
R-171	Granite Street	57	58	60	3
R-172	Granite Street	62	63	63	1
R-173	Lookout Drive	59	60	60	1
R-174	Lookout Drive	54	55	55	1
R-175	North Ellis Street	59	60	60	1
R-176	North Ellis Street	61	62	62	1
R-177	Granite Street	61	62	63	2
R-178	Granite Street	60	61	62	2
R-179	Lookout Drive	60	61	61	1
R-180	Lookout Drive	60	61	61	1
R-181	North Ellis Street	59	60	61	2
R-182	North Ellis Street	56	57	57	1
R-183	North Ellis Street	60	62	62	2
R-184	North Ellis Street	60	61	61	1
R-185	Minthorn Street	**67**	**68**	**71**	4
R-186	Minthorn Street	66	67	73	7
R-187	Minthorn Street	73	75	75	2

Source: *Noise Study Report* (August 2015).

[1] Noise levels for this receptor are not shown because it is located beyond the limits of construction under Alternative 4.
[2] Either no barrier was analyzed at this location because the modeled receptor would not approach or exceed the NAC or this receptor would be acquired under this alternative.
[3] Exterior/interior noise level. The interior noise level was determined using a 20 dB exterior-to-interior noise level reduction.
[4] Numbers in bold represent noise levels that approach or exceed the NAC.
[5] Exterior/interior noise level. The interior noise level was determined using a 25 dB exterior-to-interior noise level reduction.
[6] This receptor would be fully acquired by the project under Alternative 4.

dB = decibels
dBA = A-weighted decibels
ft = foot/feet
L_{eq}(h) =1-hour A-weighted equivalent sound level

Under the future with project conditions, of the modeled receptors, 8 receptors would approach or exceed the 67 dBA L_{eq} NAC. Of the modeled receptors, one of the sensitive receptors would approach or exceed the NAC under Activity Category C. The following receptor locations would be or would continue to be exposed to noise levels that approach or exceed the 67 dBA L_{eq} NAC under Alternative 4 traffic conditions:

- **Receptors R-54 and R-55:** These receptor locations represent existing residences along Drexel Court on the east side of I-15 south of Railroad Canyon Road. Currently there is an 8 ft high combination masonry block wall and Plexiglas barrier along the property line to shield these residences. Two noise barrier locations were considered to shield the impacted receptors. Under the first scenario, EW No. 5 was modeled at its current location at heights greater than the existing wall and renamed as NB No. 4-2, for Alternative 4, to shield these residences. Under the second scenario, NB No. 4-2B for Alternative 4, was modeled along the edge of road on the west side of Grape Street to shield these residences.
- **Receptors R-92, R-94 and R-106:** These receptor locations represent existing residences and the playground along Auto Center Drive on the west side of I-15 between Railroad

Canyon Road and Main Street. Currently, there is a 3 to 6 ft high wall along the property line to shield the playground and residences. Two noise barrier locations were considered to shield the impacted receptors. Under the first scenario, a portion of EW No. 8 was evaluated with an increased height at its current location and renamed as NB No. 4-3 for Alternative 4, to shield these residences. Under the second scenario, a smaller section of EW No. 8 was modeled at its current location at heights greater than the existing wall in addition to a new segment of barrier located along the west side of I-15 southbound. Both segments of the barrier were combined to be named NB No. 4-3B for Alternative 4, to shield these residences and the playground.

- **Receptors R-158 and R-159:** These receptor locations represent existing residences along East Hill Street on the west side of I-15 south of Main Street. Currently, there are no existing walls that shield these residences. One noise barrier for Alternative 4 (NB No. 4-4) was modeled along the edge of shoulder to shield these residences.
- **Receptor R-185:** This receptor location represents an existing residence along Minthorn Street on the east side of I-15 south of Main Street. Currently there are no existing walls that shield this residence. One noise barrier for Alternative 4 (NB No. 4-5) was modeled along the edge of shoulder to shield this residence.

Long-Term Interior Noise Impacts

Similar to Alternative 2, the project area for Alternative 4 includes a church, school, and two medical facilities. To determine the attenuation provided by each of the buildings, simultaneous noise measurements were taken inside and outside a room at each building. The measured building attenuation was applied to the predicted future worst-case exterior level to obtain the predicted future interior noise level. According to the Traffic Noise Analysis Protocol, interior noise levels under Activity Category D must not approach or exceed 52 dBA L_{eq}(h). Table 2.16.R identifies the predicted traffic noise levels for buildings in the project area under Alternative 4.

Table 2.16.R: Alternative 4 Interior Noise Analysis

Receptor No.	Location	Future Noise Levels, (dBA L_{eq}) 2040 Noise Level		
		Exterior (dBA L_{eq})	Interior (dBA L_{eq})	Exterior to Interior Noise Level Reduction
R-2	Church	58	38[1]	20
R-31	School	61	41[1]	20
R-73	Medical Facility	66	46[2]	20
R-86	Medical Facility	71	46[3]	25

Source: *Noise Study Report* (August 2015).
1 Exterior/interior noise level. The interior noise level was determined using a 20 dB exterior-to-interior noise level reduction.
2 Either no barrier was analyzed at this location because the modeled receptor would not approach or exceed the NAC or this receptor would be acquired under this alternative.
3 Exterior/interior noise level. The interior noise level was determined using a 25 dB exterior-to-interior noise level reduction.
dBA = A-weighted decibels
L_{eq} = equivalent continuous sound level

Based on these projected traffic noise levels, interior noise levels at all buildings under Alternative 4 traffic conditions would not approach or exceed 52 dBA L_{eq} NAC. Therefore, no noise abatement measures for these buildings are required.

Noise Abatement Consideration

Similar to Alternative 2, noise abatement measures, such as noise barriers, were considered to shield noise-sensitive receptors located along I-15 where sensitive receptors exist and would continue to be exposed to traffic noise levels approaching or exceeding the NAC under Alternative 4. Noise barriers were analyzed for each of these sensitive receptors. At each location, 6 noise barrier heights were analyzed: 6, 8, 10, 12, 14, and 16 ft. If noise barriers would be located within 15 ft of the nearest travel lane, a 16 ft noise barrier height was not analyzed. The following barriers were analyzed to shield the sensitive receptor locations that would be exposed to traffic noise levels approaching or exceeding the NAC under Alternative 4:

- **NB No. 4-2:** A 200 ft long barrier along the property line on the east side of I-15 south of Railroad Canyon Road was analyzed to shield Receptors R-54 and R-55.
- **NB No. 4-2B:** As an alternative to NB No. 4-2, a 906 ft long barrier along the edge of shoulder on the west side of Grape Street was analyzed to shield Receptors R-54 and R-55.
- **NB No. 4-3:** A 929 ft long barrier along the property line on the west side of I-15 between Railroad Canyon Road and Main Street was analyzed to shield Receptors R-92, R-94, and R-106.
- **NB No. 4-3B:** As an alternative to NB No. 4-3, a two-segment barrier that is 1,225 ft long combined on the west side of I-15 between Railroad Canyon Road and Main Street was analyzed to shield Receptors R-92, R-94, and R-106.
- **NB No. 4-4:** A 1,305 ft long barrier along the edge of shoulder on the west side of I-15 south of Main Street was analyzed to shield Receptors R-158 and R-159.
- **NB No. 4-5:** A 1,058 ft long barrier along the edge of shoulder on the east side of I-15 south of Main Street was analyzed to shield Receptor R-185.

Figure 2.16.4 shows the analyzed noise barriers for Alternative 4. The results of the noise barrier modeling are provided in Tables 2.16.S and 2.16.T.

Noise Barrier Feasibility

A minimum noise reduction of 5 dBA must be achieved at an impacted receptor for the noise abatement measure to be considered feasible. The feasibility criterion is not necessarily a noise abatement design goal. Greater noise reductions are encouraged if they can be reasonably achieved. Feasibility may also be restricted by the following factors: (1) topography, (2) access requirements for driveways and ramps, (3) the presence of local cross streets, (4) utility conflicts, (5) other noise sources in the area, and (6) safety considerations.

Of the six modeled noise barriers evaluated under Alternative 4, four noise barriers were capable of reducing noise levels by 5 dBA or more, as required to be considered feasible. NB Nos. 4-2B and 4-5 were determined to not be feasible because the barrier would not reduce noise levels by 5 dBA or more. Table 2.16.U lists all the feasible noise barriers for Alternative 4.

This page intentionally left blank

Modeled Receptor Locations
Existing Walls
Noise Barriers
Alternative 4 Layout
Main St and Franklin St Layout
Existing City ROW
Existing Caltrans ROW
Alternative 4 Proposed ROW

0 100 200
FEET

SOURCE: Bing Aerial, 2015; SC Engineering, 2014

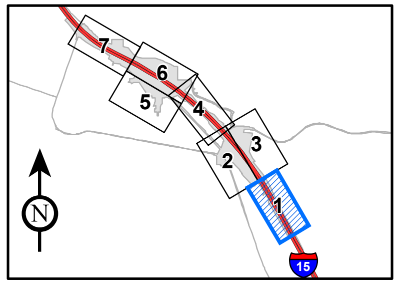


FIGURE 2.16.4
Sheet 1 of 7

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment
Alternative 4
Modeled Noise Barrier and Modeled Receptor Locations

I:\SAE1401\Reports\IS_EA\Fig2-16-4 _ModNoiseBarrier_ReceptorLoc_Alt4.mxd (6/23/2017)

This page intentionally left blank

Modeled Receptor Locations
Existing Walls
Noise Barriers
Alternative 4 Layout
Main St and Franklin St Layout
Existing City ROW
Existing Caltrans ROW
Alternative 4 Proposed ROW

0 100 200
FEET

SOURCE: Bing Aerial, 2015; SC Engineering, 2014

FIGURE 2.16.4
Sheet 2 of 7

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment
Alternative 4
Modeled Noise Barrier and Modeled Receptor Locations

I:\SAE1401\Reports\IS_EA\Fig2-16-4 _ModNoiseBarrier_ReceptorLoc_Alt4.mxd (6/23/2017)

This page intentionally left blank

Modeled Receptor Locations
Existing Walls
Noise Barriers
Alternative 4 Layout
Main St and Franklin St Layout
Alternative 4 Proposed ROW
Existing City ROW
Existing Caltrans ROW

0 100 200
FEET

SOURCE: Bing Aerial, 2015; SC Engineering, 2014

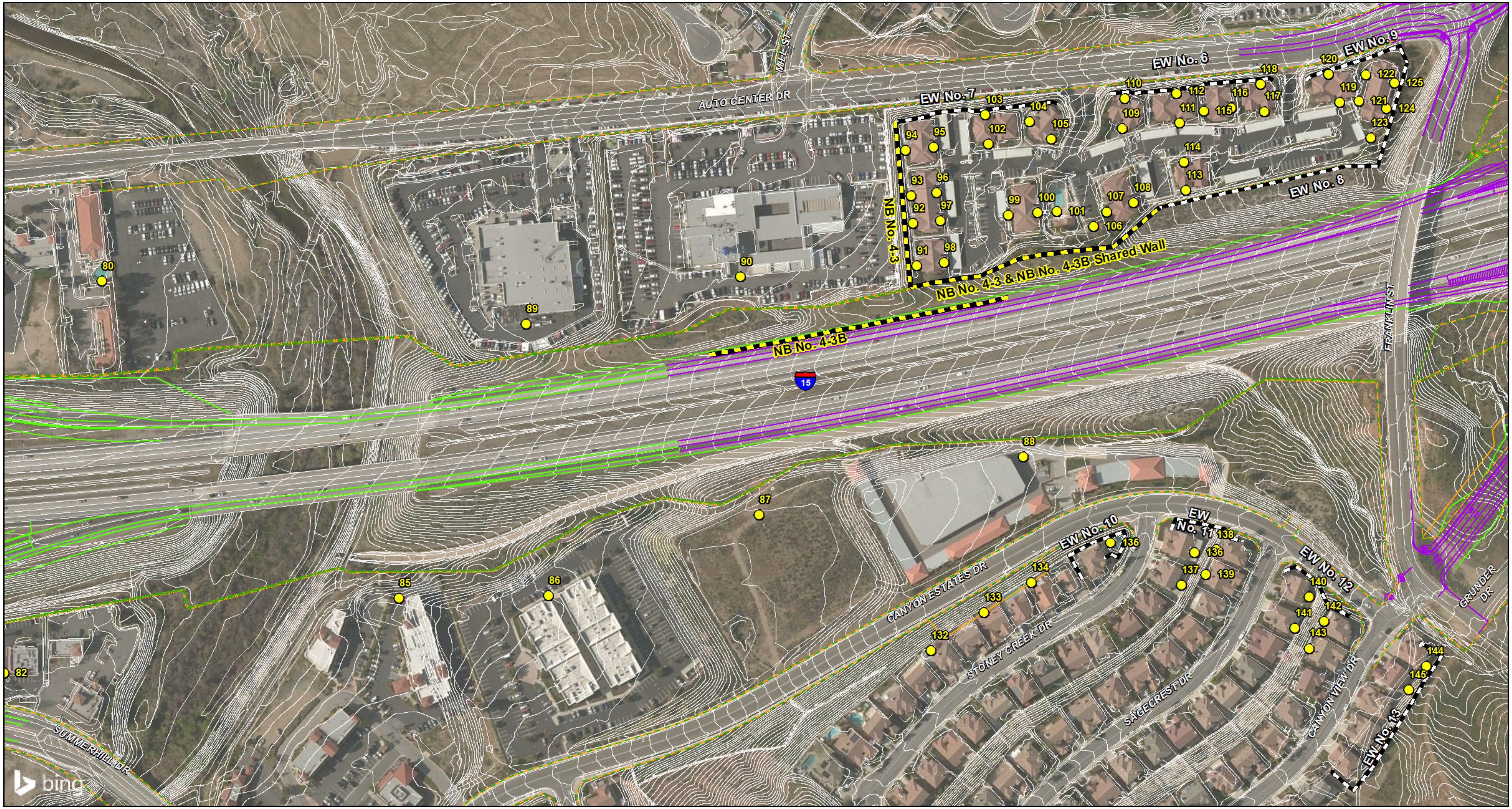
FIGURE 2.16.4
Sheet 3 of 7

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Alternative 4
Modeled Noise Barrier and Modeled Receptor Locations

I:\SAE1401\Reports\IS_EA\Fig2-16-4 _ModNoiseBarrier_ReceptorLoc_Alt4.mxd (6/23/2017)

This page intentionally left blank



Modeled Receptor Locations

Existing Walls

Noise Barriers

Alternative 4 Layout

Main St and Franklin St Layout

Existing City ROW

Existing Caltrans ROW

Alternative 4 Proposed ROW

0 100 200
FEET

SOURCE: Bing Aerial, 2015; SC Engineering, 2014

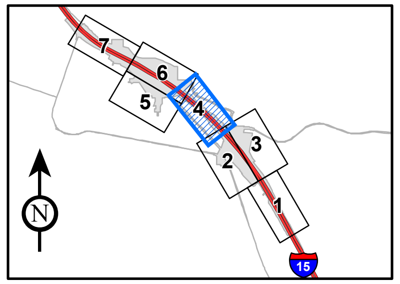


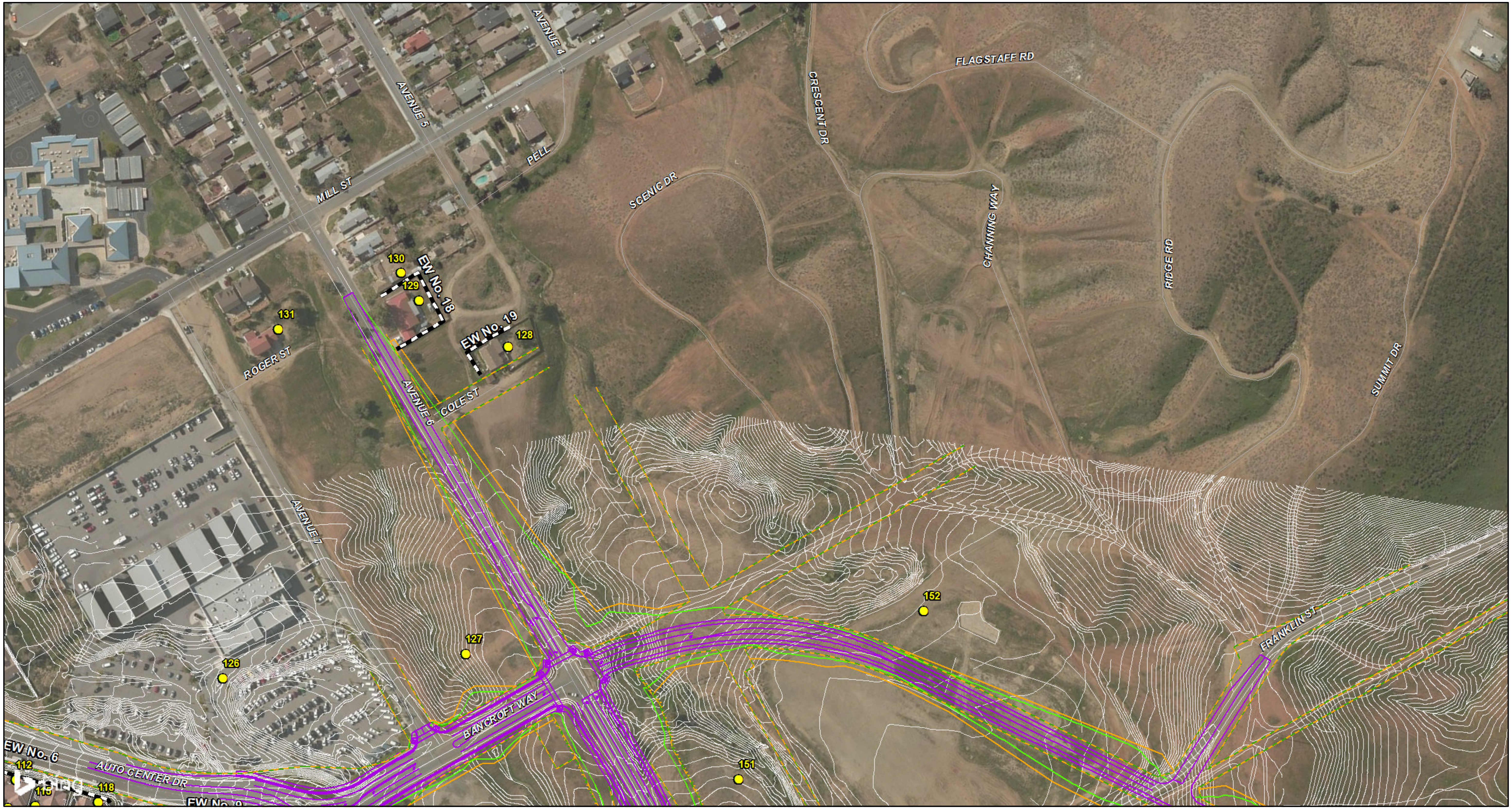
FIGURE 2.16.4
Sheet 4 of 7

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Alternative 4
Modeled Noise Barrier and Modeled Receptor Locations

I:\SAE1401\Reports\IS_EA\Fig2-16-4 _ModNoiseBarrier_ReceptorLoc_Alt4.mxd (6/23/2017)

This page intentionally left blank



Modeled Receptor Locations
Existing Walls
Noise Barriers
Alternative 4 Layout
Main St and Franklin St Layout
Existing City ROW
Existing Caltrans ROW
Alternative 4 Proposed ROW

0 100 200
FEET

SOURCE: Bing Aerial, 2015; SC Engineering, 2014

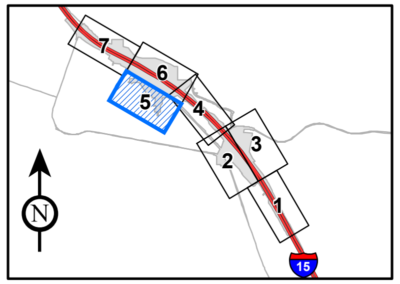


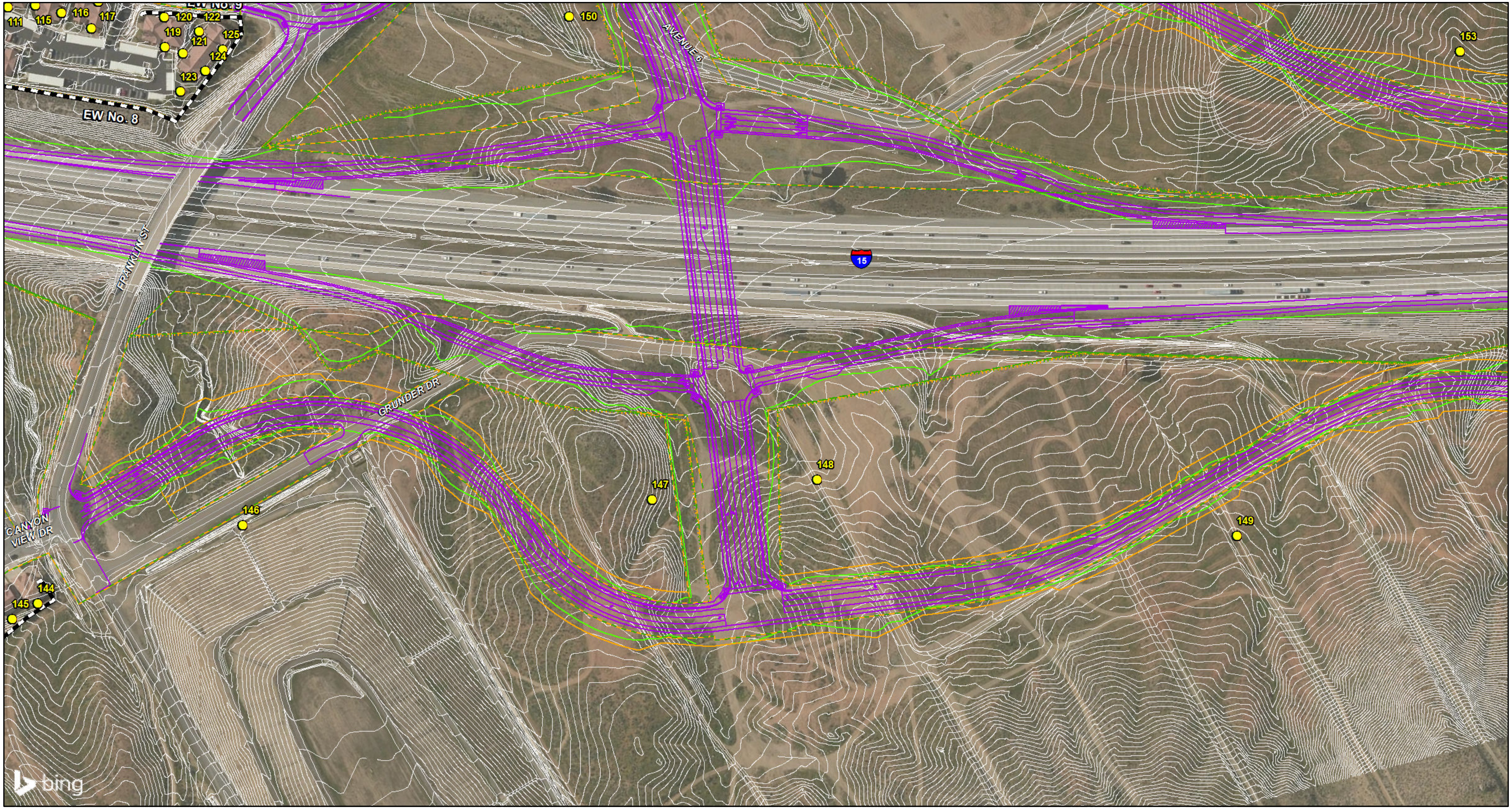
FIGURE 2.16.4
Sheet 5 of 7

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Alternative 4
Modeled Noise Barrier and Modeled Receptor Locations

I:\SAE1401\Reports\IS_EA\Fig2-16-4 _ModNoiseBarrier_ReceptorLoc_Alt4.mxd (6/23/2017)

This page intentionally left blank



Modeled Receptor Locations
Existing Walls
Noise Barriers
Alternative 4 Layout
Main St and Franklin St Layout
Existing City ROW
Existing Caltrans ROW
Alternative 4 Proposed ROW

0 100 200
FEET

SOURCE: Bing Aerial, 2015; SC Engineering, 2014

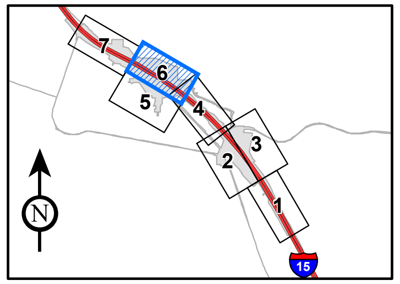
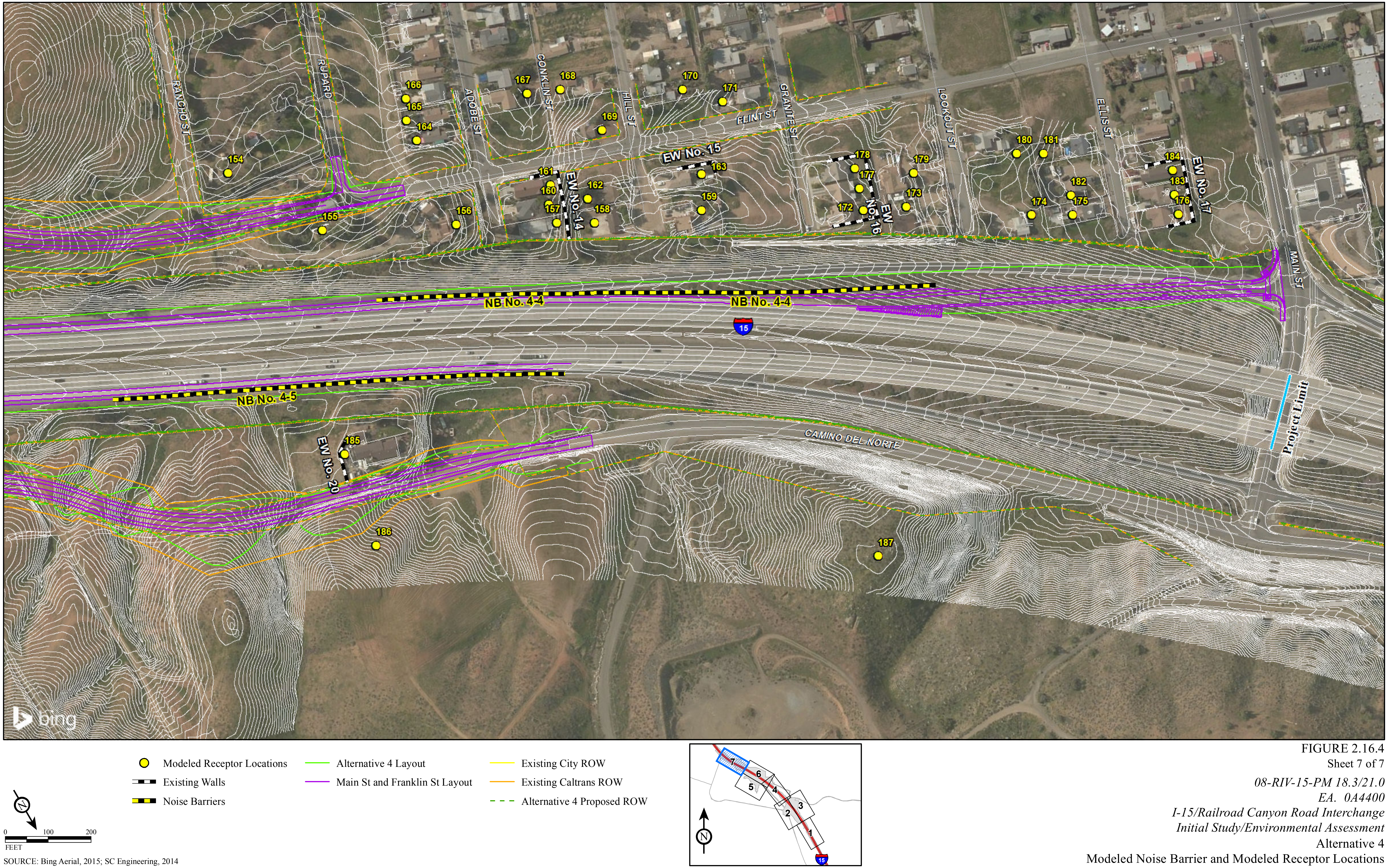


FIGURE 2.16.4
Sheet 6 of 7

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment
Alternative 4
Modeled Noise Barrier and Modeled Receptor Locations

I:\SAE1401\Reports\IS_EA\Fig2-16-4 _ModNoiseBarrier_ReceptorLoc_Alt4.mxd (6/23/2017)

This page intentionally left blank



SOURCE: Bing Aerial, 2015; SC Engineering, 2014

I:\SAE1401\Reports\IS_EA\Fig2-16-4 _ModNoiseBarrier_ReceptorLoc_Alt4.mxd (6/23/2017)

FIGURE 2.16.4
Sheet 7 of 7

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment
Alternative 4
Modeled Noise Barrier and Modeled Receptor Locations

This page intentionally left blank

Table 2.16.S: Alternative 4 Noise Barrier Analysis (dBA L_{eq})

Receptor No.	NB No.	Future Noise Levels (dBA Leq(h))																		
		2040 Noise Level	Noise Prediction with Barrier, Barrier I.L., and NBR																	
			6 ft			8 ft			10 ft			12 ft			14 ft			16 ft		
		Build	Leq(h)	I.L.1	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR
R-1		--[2]	--[3]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-2		58/38[4]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-3		--[2]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-4		--[2]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-5		--[2]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-6		--[2]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-7		--[2]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-8		--[2]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-9		--[2]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-10		--[2]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-11		--[2]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-12		--[2]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-13		--[2]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-14		--[2]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-15		--[2]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-16		--[2]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-17		--[2]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-18		--[2]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-19		--[2]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-20		--[2]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-21		--[2]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-22		--[2]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-23		--[2]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-24		70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-25		55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-26		66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-27		64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-28		63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-29		58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-30		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-31		61/41[4]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-32		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-33		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-34		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 2.16.S: Alternative 4 Noise Barrier Analysis (dBA L_{eq})

Receptor No.	NB No.	Future Noise Levels (dBA Leq(h))																		
		2040 Noise Level	Noise Prediction with Barrier, Barrier I.L., and NBR																	
			6 ft			8 ft			10 ft			12 ft			14 ft			16 ft		
		Build	Leq(h)	I.L.[1]	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR
R-35		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-36		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-37		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-38		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-39		60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-40		58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-41		56	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-42		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-43		60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-44		57	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-45		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-46		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-47		63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-48		59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-49		58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-50		58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-51		63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-52		62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-53		59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-54	4-2	**67**	--[7]	--	--	--	--	--	65	2	0	65	2	0	63	4	0	62[8]	5	2
R-55		**66**	--	--	--	--	--	--	64	2	0	64	2	0	63	3	0	62	4	0
R-56		59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-57		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-58		74	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-59		68	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-60		70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-61		65	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-62		69	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-63		67	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-64		60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-65		59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-66		67	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-67		66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-68		59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 2.16.S: Alternative 4 Noise Barrier Analysis (dBA L_{eq})

Receptor No.	NB No.	Future Noise Levels (dBA Leq(h))																		
		2040 Noise Level	Noise Prediction with Barrier, Barrier I.L., and NBR																	
			6 ft			8 ft			10 ft			12 ft			14 ft			16 ft		
		Build	Leq(h)	I.L.1	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR
R-69		64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-70		66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-71		71	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-72		69	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-73		66/46[3]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-74		68	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-75		69	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-76		66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-77		68	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-78		62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-79		69	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-80		65	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-81		66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-82		70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-83		70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-84		74	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-85		70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-86		71/46[9]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-87		75	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-88		70	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-89		76	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-90		76	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-91	4-3	63	63	0	0	60	3	0	58	5	2	56	7	2	56	7	2	55	8	2
R-92		**66**	**66**	0	0	63	3	0	62	4	0	61	5	2	60	6	2	59	7	2
R-93		64	64	0	0	62	2	0	61	3	0	60	4	0	59	5	2	58	6	2
R-94		**68**	64	4	0	61	7	2	60	8	2	58	10	2	57	11	2	57	11	2
R-95		58	58	0	0	58	0	0	58	0	0	57	1	0	57	1	0	57	1	0
R-96		61	61	0	0	60	1	0	59	2	0	59	2	0	58	3	0	58	3	0
R-97		64	64	0	0	62	2	0	62	2	0	61	3	0	60	4	0	60	4	0
R-98		63	63	0	0	60	3	0	58	5	2	57	6	2	56	7	2	56	7	2
R-99		63	63	0	0	62	1	0	61	2	0	60	3	0	60	3	0	59	4	0
R-100		55	55	0	0	55	0	0	55	0	0	54	1	0	54	1	0	54	1	0
R-101		60	60	0	0	59	1	0	58	2	0	58	2	0	57	3	0	56	4	0
R-102		60	59	1	0	59	1	0	58	2	0	58	2	0	58	2	0	57	3	0

Table 2.16.S: Alternative 4 Noise Barrier Analysis (dBA L_{eq})

Receptor No.	NB No.	Future Noise Levels (dBA Leq(h))																		
		2040 Noise Level	Noise Prediction with Barrier, Barrier I.L., and NBR																	
			6 ft			8 ft			10 ft			12 ft			14 ft			16 ft		
		Build	Leq(h)	I.L.1	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR
R-103	4-3	63	63	0	0	63	0	0	63	0	0	63	0	0	63	0	0	63	0	0
R-104		57	57	0	0	57	0	0	57	0	0	57	0	0	57	0	0	57	0	0
R-105		59	59	0	0	59	0	0	59	0	0	58	1	0	58	1	0	58	1	0
R-106		67	**67**	0	0	**66**	1	0	65	2	0	64	3	0	63	4	0	63	4	0
R-107		59	59	0	0	57	2	0	56	3	0	56	3	0	55	4	0	55	4	0
R-108		57	57	0	0	57	0	0	57	0	0	57	0	0	56	1	0	56	1	0
R-109		59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-110		62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-111		58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-112		64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-113		59	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-114		56	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-115		55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-116		57	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-117		58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-118		64	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-119		57	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-120		63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-121		56	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-122		60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-123		60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-124		60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-125		62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-126		55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-127		55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-128		48	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-129		49	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-130		50	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-131		53	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-132		65	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-133		63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-134		63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-135		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-136		55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Table 2.16.S: Alternative 4 Noise Barrier Analysis (dBA L_{eq})

Receptor No.	NB No.	Future Noise Levels (dBA Leq(h))																		
		2040 Noise Level	Noise Prediction with Barrier, Barrier I.L., and NBR																	
			6 ft			8 ft			10 ft			12 ft			14 ft			16 ft		
		Build	Leq(h)	I.L.1	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR
R-137		54	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-138		60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-139		58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-140		54	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-141		53	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-142		63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-143		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-144		55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-145		52	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-146		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-147		63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-148		63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-149		66	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-150		58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-151		55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-152		58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-153		60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-154		56	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-155		--[10]	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-156		62	61	1	0	59	3	0	58	4	0	57	5	1	57	5	1	NP[11]	NP	0
R-157		63	63	0	0	60	3	0	59	4	0	58	5	1	58	5	1	NP	NP	0
R-158		**66**	64	2	0	64	2	0	61	5	1	60	6	1	60	6	1	NP	NP	0
R-159		**67**	64	3	0	63	4	0	63	4	0	61	6	1	60	7	1	NP	NP	0
R-160		63	62	1	0	59	4	0	58	5	1	58	5	1	57	6	1	NP	NP	0
R-161		62	61	1	0	59	3	0	59	3	0	58	4	0	58	4	0	NP	NP	0
R-162		65	63	2	0	63	2	0	61	4	0	60	5	1	60	5	1	NP	NP	0
R-163	4-4	63	62	1	0	62	1	0	61	2	0	60	3	0	59	4	0	NP	NP	0
R-164		57	57	0	0	56	1	0	55	2	0	55	2	0	55	2	0	NP	NP	0
R-165		56	56	0	0	56	0	0	55	1	0	54	2	0	54	2	0	NP	NP	0
R-166		56	55	1	0	55	1	0	54	2	0	54	2	0	54	2	0	NP	NP	0
R-167		58	57	1	0	56	2	0	55	3	0	54	4	0	54	4	0	NP	NP	0
R-168		59	58	1	0	58	1	0	56	3	0	56	3	0	55	4	0	NP	NP	0
R-169		64	62	2	0	62	2	0	61	3	0	61	3	0	61	3	0	NP	NP	0
R-170		62	61	1	0	61	1	0	60	2	0	60	2	0	59	3	0	NP	NP	0

Table 2.16.S: Alternative 4 Noise Barrier Analysis (dBA L_{eq})

Receptor No.	NB No.	Future Noise Levels (dBA Leq(h))																		
		2040 Noise Level	Noise Prediction with Barrier, Barrier I.L., and NBR																	
			6 ft			8 ft			10 ft			12 ft			14 ft			16 ft		
		Build	Leq(h)	I.L.1	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR
R-171	4-4	60	60	0	0	60	0	0	59	1	0	59	1	0	59	1	0	NP	NP	0
R-172		63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-173		60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-174		55	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-175		60	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-176		62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-177		63	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-178		62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-179		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-180		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-181		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-182		57	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-183		62	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-184		61	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-185	4-5	**71**	**70**	1	0	**70**	1	0	**69**	2	0	**68**	3	0	**67**	4	0	NP	NP	0
R-186		73	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
R-187		75	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Source: Noise Study Report (August 2015).

1 I.L.: Insertion Loss.
2 Noise levels for this receptor are not shown because it is located beyond the limits of construction under Alternative 4.
3 Either no barrier was analyzed at this location because the modeled receptor would not approach or exceed the NAC or this receptor would be acquired under this alternative.
4 Exterior/interior noise level. The interior noise level was determined using a 20 dB exterior-to-interior noise level reduction.
5 There are no outdoor frequent human use areas associated with this land use.
6 Numbers in **bold** represent noise levels that approach or exceed the NAC.
7 Shaded area represents the existing wall height.
8 Underlined noise levels have been attenuated by at least 5 dBA (i.e., feasible barrier height).
9 Exterior/interior noise level. The interior noise level was determined using a 25 dB exterior-to-interior noise level reduction.
10 This receptor would be fully acquired by the project under Alternative 4.
11 NP = Not Permitted. Noise barriers within 15 ft of the nearest travel lane are not permitted to exceed 14 ft in height.

dB = decibels
dBA = A-weighted decibels
ft = foot/feet
L_{eq}(h) =1-hour A-weighted equivalent sound level
NAC = Noise Abatement Criteria
NB = Noise Barrier
NBR = Number of Benefited Receptors

Table 2.16.T: Alternative 4 Noise Barrier Analysis (dBA L_{eq})

Receptor No.	NB No.	Future Noise Levels (dBA Leq(h))																		
		2040 Noise Level	Noise Prediction with Barrier, Barrier I.L., and NBR																	
			6 ft			8 ft			10 ft			12 ft			14 ft			16 ft		
		Build	Leq(h)	I.L.1	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR	Leq(h)	I.L.	NBR
R-54	4-2B	**67**	**66**	1	0	**66**	1	0	65	2	0	65	2	0	65	2	0	NP[3]	NP	0
R-55		**66**	65	1	0	64	2	0	63	3	0	63	3	0	62	4	0	NP	NP	0
R-91	4-3B	63	63	0	0	62	1	0	61	2	2	60	3	0	59	4	0	59	4	0
R-92		**66**	65	1	0	64	2	0	63	3	0	63	3	0	62	4	0	61[4]	5	2
R-93		64	63	1	0	62	2	0	62	2	0	62	2	0	61	3	0	61	3	0
R-94		**68**	**67**	1	0	**66**	2	0	**66**	2	0	**66**	2	0	65	3	0	65	3	0
R-95		58	58	0	0	58	0	0	57	1	0	57	1	0	57	1	0	56	2	0
R-96		61	61	0	0	59	2	0	59	2	0	58	3	0	57	4	0	57	4	0
R-97		64	64	0	0	62	2	0	61	3	0	60	4	0	59[5]	5	2	59	5	2
R-98		63	63	0	0	61	2	0	59	4	0	58[5]	5	2	57[5]	6	2	57	6	2
R-99		63	63	0	0	62	1	0	61	2	0	60	3	0	59	4	0	59	4	0
R-100		55	55	0	0	55	0	0	55	0	0	54	1	0	54	1	0	54	1	0
R-101		60	60	0	0	59	1	0	58	2	0	57	3	0	56	4	0	55	5	2
R-102		60	60	0	0	59	1	0	59	1	0	59	1	0	58	2	0	58	2	0
R-103		63	63	0	0	63	0	0	63	0	0	63	0	0	63	0	0	63	0	0
R-104		57	57	0	0	57	0	0	57	0	0	57	0	0	57	0	0	56	1	0
R-105		59	59	0	0	59	0	0	59	0	0	58	1	0	58	1	0	58	1	0
R-106		**67**	**67**	0	0	**66**	1	0	65	2	0	64	3	0	63	4	0	63	4	0
R-107		59	59	0	0	57	2	0	56	3	0	56	3	0	55	4	0	55	4	0
R-108		57	57	0	0	57	0	0	57	0	0	57	0	0	56	1	0	56	1	0

Source: Noise Study Report (August 2015).

1 I.L.: Insertion Loss.

2 Numbers in **bold** represent noise levels that approach or exceed the NAC.

3 NP = Not Permitted. Noise barriers within 15 ft of the nearest travel lane are not permitted to exceed 14 ft in height.

4 Underlined noise levels have been attenuated by at least 5 dBA (i.e., feasible barrier height).

5 Although a noise level reduction of 5 dBA or more can be achieved, this noise barrier is not considered feasible because it does not attenuate noise levels by at least 5 dBA at the impacted receptor.

dB = decibels
dBA = A-weighted decibels
ft = foot/feet
L_{eq}(h) =1-hour A-weighted equivalent sound level

NAC = Noise Abatement Criteria
NB = Noise Barrier
NBR = Number of Benefited Receptors

Table 2.16.U: Alternative 4 Feasible Noise Barriers

Noise Barrier No.	Height (ft)	Approximate Length (ft)	Receptor Locations Benefited	Number of Benefited Units[1]
4-2	16[2]	200	R-54	2
4-3	8[2]	929	R-94	2
	10	929	R-91, R-94, R-98	6
	12	929	R-91, R-92, R-94, R-98	8
	14	929	R-91 to R-94, R-98	10
	16	929	R-91 to R-94, R-98	10
4-3B	16[2]	1,225	R-92, R-97, R-98, R-101	8
4-4	10	1,305	R-158–R-160	2
	12[2]	1,305	R-156 to R-160, R-162	6
	14	1,305	R-156 to R-160, R-162	6

Source: *Noise Study Report* (August 2015).

[1] Number of units that are attenuated 5 dBA or more by the modeled barrier.

[2] Denotes the minimum wall height required to break the line-of-sight between the receptor and the truck exhaust stack.

ft = foot/feet

Noise Barrier Reasonableness

The reasonableness of a noise barrier was determined by comparing the estimated construction cost of the noise barrier against the total reasonable allowance. As identified in Table 2.16.V, the total reasonable allowance was determined based on the number of benefited residences multiplied by the reasonable allowance per residence. If the estimated noise barrier construction cost exceeds the total reasonable allowance, the noise barrier is determined to be not reasonable. However, if the estimated noise barrier construction cost is within the total reasonable allowance, the noise barrier is determined to be reasonable. As indicated in Table 2.16.V, none of the feasible noise barriers were determined to be reasonable because the estimated noise barrier construction cost exceeded the total reasonable allowance.

Table 2.16.V: Alternative 4 Summary of Abatement Information

Noise Barrier No.	Height (ft)	Approximate Length (ft)	Receptor Locations Benefited	Noise Attenuation Range (dBA)	Number of Benefitted Units[1]	Reasonable Allowance per Benefited Units	Total Reasonable Allowance	Estimated Noise Barrier Construction Cost[2]	Reasonable?
4-2	16[3]	200	R-54	5	2	$71,000	$142,000	--[4]	No
4-3	8[3]	929	R-94	7	2	$71,000	$142,000	$800,000	No
	10	929	R-91, R-94	5–8	6	$71,000	$248,000	$853,000	No
	12	929	R-91, R-92, R-94, R-98	5–10	8	$71,000	$568,000	$909,000	No
	14	929	R-91 to R-94, R-98	5-11	10	$71,000	$710,000	$966,000	No
	16	929	R-91 to R-94, R-98	6-11	10	$71,000	$710,000	$1,027,000	No
4-3B	16[3]	1,225	R-92, R-97, R-98, R-101	5-6	8	$71,000	$568,000	--[4]	No
4-4	10	1,305	R-158, R-160	5	2	$71,000	$142,000	--[4]	No
	12[3]	1,305	R-156 to R-160, R-162	5–6	6	$71,000	$426,000	--[4]	No
	14	1,305	R-156 to R-160, R-162	5–7	6	$71,000	$426,000	$854,000	No

Source: *Noise Abatement Decision Report* (December 2015).
[1] Number of units that are attenuated 5 dBA or more by the modeled barrier.
[2] Noise barrier construction cost information provided by SC Engineering.
[3] Denotes the minimum wall height required to break the line-of-sight between the receptor and the truck exhaust stack.
[4] Noise barrier height was determined to be not reasonable because the barrier would not achieve at least a noise level reduction of 7 dBA at one or more benefited receptors.
dBA = A-weighted decibels
ft = feet

CEQA DISCUSSION

Would the project:

XII. 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?

Less Than Significant Impact. Surrounding land uses in the project vicinity include residential, commercial, hotels, a church, light industrial, and vacant land. In accordance with Caltrans' *Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects (*May 2011*)*, a noise impact occurs when the future noise level with the project results in a substantial increase in noise level (defined as a 12 dBA or more increase) or when the future noise level with the project approaches or exceeds the noise abatement criteria (NAC). Approaching the NAC is defined as coming within 1 dBA of the NAC.

Two types of short-term noise impacts would occur during project construction. The first short-term noise impact would be generated by construction crew commutes and the transport of construction equipment and materials to and from the project site. These activities would incrementally raise noise levels on access roads leading to the project site. The pieces of heavy equipment for grading and construction activities would be moved on site, would remain for the duration of each construction phase, and would not add to the daily traffic volume in the project vicinity. The projected construction traffic will be minimal when compared to existing traffic volumes on I-15, Railroad Canyon Road, Franklin Street, Main Street, and other affected streets, and its associated long-term noise level change will not be perceptible. Therefore, short-term, construction-related worker commutes and equipment transport noise impacts would be less than significant. No mitigation is required.

The second type of short-term noise impact is related to noise generated during excavation, grading, and roadway construction. Construction is performed in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. Typical noise levels at 50 feet from an active construction area range up to 88 dBA L_{max} during the noisiest construction phases. Construction of the project is expected to require the use of earthmovers, bulldozers, water trucks, and pickup trucks. Noise associated with the use of construction equipment is estimated between 55 and 85 dBA L_{max} at a distance of 50 feet from the active construction area for the grading phase. The worst-case composite noise level at the nearest residence during this phase of construction would be 88 dBA L_{max} at a distance of 50 feet from an active construction area.

The closest sensitive receptors are located within 50 feet of the project construction area. Therefore, these receptor locations may be subject to short-term noise higher than the 88 dBA L_{max} generated by construction activities along the project alignment. Implementation of **Minimization Measures N-1** and **N-2**, which are standard conditions presented below in Section 2.16.4, would minimize the potential short-term noise impacts during project construction and ensure impacts remain less than significant.

Future traffic noise levels at all receptor locations were determined with existing walls using the worst-case traffic operations (prior to speed degradation). Traffic noise was evaluated under existing conditions, design year no build conditions (future no build), and design year conditions with the project. Under the future with project conditions, of the modeled receptors, 9 receptors would approach or exceed the NAC under which has an exterior NAC of 67 dBA L_{eq}. Of the modeled receptors, one of the sensitive receptors would approach or exceed the NAC under Activity Category C, which has an exterior NAC of 67 dBA L_{eq}.

Several receptors would experience at least a 3 dBA increase in noise levels. A 3 dBA change is the lowest level that is barely perceptible by the average human ear in an outdoor environment. Under CEQA, a comparison is made between the baseline noise level and the build noise level. Because the project setting is urbanized, and because of the proximity of the receptors to the highway, the magnitude of the noise increase from the project is not considered substantial and would not result in a significant noise impact under CEQA; therefore, no mitigation is required.

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

Less Than Significant Impact. Vibration refers to groundborne noise and perceptible motion. Groundborne vibration is almost exclusively a concern inside buildings and is rarely perceived as a problem outdoors, where the motion may be discernable but without the effects associated with the shaking of a building. Building damage from ground vibration is not a factor for normal transportation sources, with the occasional exception of blasting and pile driving during construction. Typical sources of groundborne vibration are construction activities (e.g., blasting, pile driving, and operating heavy-duty earthmoving equipment), steel-wheeled trains, and occasional traffic on rough roads. Problems with groundborne vibration and noise from these sources are usually localized to areas within approximately 100 feet from the vibration source.

When roadways are smooth, vibration from traffic (even heavy trucks) is rarely perceptible. Streets surrounding the project site are paved, smooth, and unlikely to cause significant groundborne vibration. In addition, the rubber tires and suspension systems of buses and other on-road vehicles would make it unusual for on-road vehicles to cause groundborne noise or vibration problems. No such vehicular vibration impacts would occur, resulting in a less than significant impact.

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

Less Than Significant Impact. Please refer to CEQA Response a) above.

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

Less Than Significant Impact. Please refer to CEQA Response a) above.

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

No Impact. According to the City of Lake Elsinore's General Plan, there are no public use airports in the City. The closest public use airport to the project site is the March Air Reserve Base, which is 14 miles northeast of the project site. Due to the distance of this airport from the project, implementation of the project would not result in the exposure of people working in the project area to excessive noise. No mitigation is required.

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

No Impact. The project is located 1.5 miles to the north and northeast of Skylark Field, a private air facility utilized for skydiving (Skydive Elsinore). The airport houses 21 single-engine aircraft, five multi-engine aircraft, and four gliders. The Skylark Field is utilized for skydiving and other recreational air uses. People working and residing in the project area are already exposed to noise coming from Skylark Field in addition to noise generated from motorists traveling along I-15 and local roadways. Implementation of the project would not result in the exposure of people residing or working in the project area to increased noise levels from Skylark Field. Therefore, no impact would occur, and no mitigation is required.

2.16.4 Avoidance, Minimization, and/or Abatement Measures

The following measures are required to minimize potential construction noise impacts:

Minimization Measures

N-1 Construction activities occurring within the State right-of-way, the control of noise from construction activities, shall conform to the California Department of Transportation's (Caltrans) Standard Specifications, Section 14-8.02, "Noise Control," and the Standard Special Provisions 14-8.02, "Noise Control." The noise level from the Contractor's operations, between the hours of 9:00 p.m. and 6:00 a.m., shall not exceed 86 A-weighted decibels (dBA) at a distance of 50 feet (ft). The Contractor shall use an alternative warning method instead of a sound signal unless required by safety laws. In addition, the Contractor shall equip all internal combustion engines with the manufacturer-recommended muffler and shall not operate any internal combustion engine on the job site without the appropriate muffler.

N-2 During all site preparation, disturbance, grading, and construction within the City of Lake Elsinore (City) right-of-way, in accordance with the City of Lake Elsinore Municipal Code, the City shall require the Construction Contractor to limit construction activities to between the hours of 7:00 a.m. and 7:00 p.m., Monday through Friday, excluding weekends and holidays. If construction is needed outside of those hours or days, the City shall require the Construction Contractor to coordinate with the City.

BIOLOGICAL ENVIRONMENT

2.17 Natural Communities

This section of the document discusses natural communities of concern. The focus of this section is on biological communities, not individual plant or animal species. The emphasis of the section should be on the ecological function of the natural communities within the area. This section also includes information on wildlife corridors and habitat fragmentation. Wildlife corridors are areas of habitat used by wildlife for seasonal or daily migration. Habitat fragmentation involves the potential for dividing sensitive habitat and thereby lessening its biological value.

Habitat areas that have been designated as critical habitat under the Federal Endangered Species Act are discussed below in the Threatened and Endangered Species, Section 2.21.

2.17.1 Affected Environment

This section is based on the following documents prepared for the project:

- *Natural Environment Study* (August 2017)
- *Update to the Natural Environment Study Memorandum* (January 2015)
- *Wetlands Delineation and Assessment of Jurisdictional Waters Report* (August 2017)

2.17.1.1 Soils

According to *Soil Survey of Western Riverside Area, California* (United States Department of Agriculture 1980), there are multiple soils within the project study area. Soils present within the project study area are summarized in Table 2.17.A.

2.17.1.2 Vegetation

The study area that is assessed for biological resources is referred to as the Biological Study Area (BSA). Vegetation within the BSA has been affected by the existing Interstate 15 (I-15) infrastructure, paved and dirt roadways, residential and commercial development, off-road vehicle use, and disking practices. Aside from developed areas, the BSA contains six vegetation communities: disturbed/ruderal, disturbed Riversidean sage scrub (RSS), southern willow scrub, willow scrub, mule fat scrub, and ornamental. The dominant vegetation community within the BSA is disturbed/ruderal.

Ruderal vegetation persists around fencing, buildings, vacant lots, and drainages. Dominant vegetation in these areas includes California aster (*Corethrogyne filaginifolia*), common fiddleneck (*Amsinckia menziesii*), shortpod mustard (*Hirschfeldia incana*), redstem stork's bill (*Erodium cicutarium*), horehound (*Marrubium vulgare*), slender wild oat (*Avena barbata*), and red brome (*Bromus madritensis* ssp. *rubens*).

Disturbed Riversidean sage scrub is primarily present north and south of Grunder Drive, and along the margins and slopes of the I-15. This plant community is composed predominantly of California buckwheat (*Eriogonum fasciculatum*). Other species present include California sage (*Artemesia californica*) and deerweed (*Lotus scoparius*). This community also contained predominant understory of ruderal plant species identified above.

Table 2.17.A: Soils Present within the BSA

Soil Type	Percentage Slope
AIC	Arbuckle gravelly loam 2 to 8 percent slopes
AID	Arbuckle gravelly loam 8 to 15 percent slopes
AIE	Arbuckle gravelly loam 15 to 25 percent slopes
CaD2	Cajalco fine sandy loam 8 to 15 percent slopes
CbF2	Cajalco rocky fine sandy loam 15 to 50 percent slopes
ChF2	Cieneba sandy loam 15 to 50 percent slopes
CkF2	Cieneba rocky sandy loam 15 to 50 percent slopes
CnC	Cortina gravelly coarse sandy loam 2 to 8 percent slopes
GdC	Garretson gravelly very fine sandy loam 2 to 8 percent slopes
GdD2	Garretson gravelly very fine sandy loam 8 to 15 percent slopes
GyA	Greenfield sandy loam 0 to 2 percent slopes
GyC2	Greenfield sandy loam 2 to 8 percent slopes
GyD2	Greenfield sandy loam 8 to 15 percent slopes
GyE2	Greenfield sandy loam 15 to 25 percent slopes
HcC	Hanford coarse sandy loam 2 to 8 percent slopes
HcD2	Hanford coarse sandy loam 8 to 15 percent slopes
HdD2	Hanford cobbly coarse sandy loam 2 to 15 percent slopes
HnC	Honcut sandy loam 2 to 8 percent slopes
HnD2	Honcut sandy loam 8 to 15 percent slopes
HoE	Honcut cobbly sandy loam 2 to 25 percent slopes
LaD2	Las Posas loam 8 to 15 percent slopes
LkF3	Las Posas rocky loam 15 to 50 percent slopes
LpF2	Lodo rocky loam 25 to 50 percent slopes
MnD2	Monserate sandy loam
RaC2	Ramona sandy loam 5 to 8 percent slopes
SsD	Soboba stony loamy sand 2 to 15 percent slopes
TeG	Terrace escarpments None
VsD2	Vista coarse sandy loam 8 to 15 percent slopes
VsF2	Vista coarse sandy loam 15 to 35 percent slopes
YbD2	Yokohl loam 8 to 15 percent slopes
YsE2	Ysidora gravelly very fine sandy loam 8 to 25 percent slopes
YsE3	Ysidora gravelly very fine sandy loam 8 to 25 percent slopes

Source: Natural Environment Study (August 2017)
BSA = Biological Study Area

Southern willow scrub is present within the banks of the San Jacinto River. Vegetation in these areas is composed mainly of Goodding's willow (*Salix gooddingii*), emergent Fremont cottonwood (*Populus fremontii*), and western sycamore (*Platanus racemosa*). Primary subdominant plant species identified include mule fat (*Baccharis salicifolia*), Emory's baccharis (*Baccharis emoryi*), and rough cocklebur (*Xanthium strumarium*).

A small patch of disturbed willow scrub is located within a concrete-lined drainage channel at the I-15, along the Main Street southbound off-ramp. Vegetation in this area is composed primarily of emergent Goodding's willow. Other vegetation noted includes mule fat and

Mediterranean tamarisk (*Tamarix ramosissima*). A few individual mature Goodding's willows are also present within Drainage D4.

Willow scrub is present within the banks of the San Jacinto River and is dominated by mule fat. Mule fat scrub is also present within a concrete-lined drainage channel east of I-15, along the Railroad Canyon Road northbound on-ramp. This drainage channel is tributary to the San Jacinto River and dominant vegetation within this area includes mule fat, cattail (*Typha* sp.), Mediterranean tamarisk, and Goodding's willow.

Ornamental vegetation is present primarily within the northwestern portion of the BSA along the margins of the I-15 and at the I-15/Main Street interchange. Dominant species identified include eucalyptus (*Eucalyptus* sp.), pepper tree (*Schinus* sp.), and tree of heaven (*Ailanthus altissima*).

2.17.1.3 Wildlife Corridors

Much of the habitat within the BSA has been fragmented by existing residential, commercial, and infrastructure development. I-15 is a regional barrier to east and west wildlife movement through the BSA and surrounding areas. The San Jacinto River, where it passes under the I-15 within the BSA, likely provides for some level of regional wildlife movement. No direct effects to the San Jacinto River would occur as a result of the project. The project would not affect any wildlife movement corridors in the vicinity.

2.17.1.4 Habitat Conservation Plans and Natural Communities Conservation Plans

Habitat Conservation Plans are prepared pursuant to Section 10[a][1][b] of the Federal Endangered Species Act in order to conserve habitat and receive incidental take[1] permits for take of threatened and endangered fish and wildlife species. The State process of issuing an incidental take[2] permit under the California Endangered Species Act can complement the Federal Habitat Conservation Plan process and may include the same or similar species, depending on their status. As provided in Section 2835 of the Fish and Game Code, the California Department of Fish and Wildlife (CDFW) may permit the take, of any identified species whose conservation and management is provided for in a CDFW-approved Natural Communities Conservation Plan. A Natural Communities Conservation Plan identifies and provides for the regional or areawide protection of plants, animals, and their habitats while allowing compatible and appropriate economic activity. Sections 2081(b) and 2081(c) of the California Endangered Species Act allow the CDFW to issue an incidental take permit for State listed threatened and endangered species.

Habitat Conservation Plans and Natural Communities Conservation Plans that are applicable to the project are the western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) and the Habitat Conservation Plan for the Stephens' kangaroo rat.

WESTERN RIVERSIDE COUNTY MSHCP

The Western Riverside County MSHCP serves as a comprehensive, multijurisdictional MSHCP and Natural Communities Conservation Plan, and focuses on the conservation of species and their associated habitats in western Riverside County. The Western Riverside County MSHCP allows its permittees to better control local land use decisions and maintain a strong economic climate in the region while adhering to the requirements of the Federal Endangered Species Act

1 "Take" is defined under Federal Endangered Species Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."

2 "Take" is defined by the California Fish and Game Code as "to hunt, pursue, catch, capture, or kill or to attempt to hunt, pursue, catch, capture, or kill."

and the California Endangered Species Act. The Western Riverside County MSHCP allows participating jurisdictions to authorize the "take" of plant and animal species identified in the Western Riverside County MSHCP and found within the boundaries of the Western Riverside County MSHCP Plan Area. Regulation of the "take" of threatened, endangered, and rare species is authorized by the wildlife agencies (United States Fish and Wildlife Service [USFWS] and CDFW). The wildlife agencies allow "Take Authorization" for otherwise lawful actions (e.g., public and private development) in exchange for the assembly and management of a coordinated western Riverside County MSHCP Conservation Area.

The Western Riverside County MSHCP Plan Area encompasses approximately 1.26 million acres (1,966 square miles) and includes all unincorporated land in Riverside County west of the crest of the San Jacinto Mountains to the Orange County line, as well as the jurisdictional areas of the Cities of Temecula, Murrieta, Lake Elsinore, Canyon Lake, Norco, Corona, Riverside, Moreno Valley, Banning, Beaumont, Calimesa, Perris, Hemet, and San Jacinto. The Western Riverside County MSHCP Plan Area covers multiple species and habitats within a diverse landscape, from urban centers to undeveloped foothills and montane forests,[1] all under multiple jurisdictions. The Western Riverside County MSHCP Plan Area also extends across many bioregions as well, including the Santa Ana Mountains, Riverside Lowlands, San Jacinto Foothills, San Jacinto Mountains, Agua Tibia Mountains, Desert Transition, and San Bernardino Mountains. The goal of the Western Riverside County MSHCP is to provide a coordinated conservation area and implementation program to preserve biological diversity and maintain the region's quality of life.

The Conservation Area is assembled from portions of the western Riverside County MSHCP Criteria Area, which consists of one-quarter-section (i.e., approximately 160 acres) cells, each with specific criteria for conservation requirements.

As permittees under the Western Riverside County MSHCP, the City of Lake Elsinore (City) and the California Department of Transportation (Caltrans) are obligated to implement specific conditions, as described in Sections 13.2 and 13.8 of the Western Riverside County MSHCP Implementation Agreement respectively, and to abide by the Section 10(a)(1) permit conditions. Such requirements include: (1) compliance with the policies for the Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools as set forth in Section 6.1.2 of the Western Riverside County MSHCP; (2) compliance with the policies for the Protection of Narrow Endemic Plant Species as set forth in Section 6.1.3 of the Western Riverside County MSHCP; (3) compliance with surveys to be conducted as set forth in Section 6.3.2 of the Western Riverside County MSHCP; (4) compliance with the Urban/Wildlands Interface Guidelines as set forth in Section 6.1.4 of the Western Riverside County MSHCP; and (5) compliance with the Best Management Practices (BMPs) and the siting and design criteria as set forth in Section 7.0 and Appendix C of the Western Riverside County MSHCP.

HABITAT CONSERVATION PLAN FOR THE STEPHENS' KANGAROO RAT

The Riverside County Habitat Conservation Agency (RCHCA) conducted biological studies and produced a document titled *Habitat Conservation Plan for the Stephens' Kangaroo Rat in Western Riverside County* (March 1996). The Habitat Conservation Plan was submitted to the resource agencies to obtain a "take" permit that would be valid for 30 years, authorizing incidental take of Stephens' kangaroo rat within the Plan area pursuant to Section 10(a)(1)(B) of the Federal Endangered Species Act and pursuant to Section 2081 of the California Fish and Game Code. The Habitat Conservation Plan covers 533,954 acres within RCHCA member

[1] Mountain forests: montane forest begins at about 1,500–2,000 feet and transitions into subalpine forests at about 4,000 feet.

jurisdictions, including approximately 30,000 acres of occupied Stephens' kangaroo rat habitat. The RCHCA established a regional system of seven core areas comprising public and private lands for conservation of Stephens' kangaroo rat. The core Stephens' kangaroo rat areas include Motte Rimrock, Lake Skinner, Lake Mathews-Estelle Mountain, San Jacinto-Lake Perris, Sycamore Canyon-March Air Reserve Base, Steele Peak, and Potrero Area of Critical Environmental Concern (ACEC). These core Stephens' kangaroo rat areas will contribute to the conservation of covered species under the western Riverside County MSHCP.

2.17.2 Environmental Consequences

2.17.2.1 Temporary Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

The No Build Alternative would not result in the construction and modification of the existing freeway and local street structures. Therefore, the project would not result in any adverse temporary impacts to natural communities in the BSA.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

Alternative 2 would require ground disturbance and modification to existing freeway and local street structures. Therefore, all impacts are considered permanent for purposes of this analysis and based on the project design. Therefore, there are no temporary impacts to natural communities associated with Alternative 2. Permanent impacts are discussed below.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

Alternative 3 would require ground disturbance and modification to existing freeway and local street structures. Therefore, all impacts are considered permanent for purposes of this analysis and based on the project design. Therefore, there are no temporary impacts to natural communities associated with Alternative 3. Permanent impacts are discussed below.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

Alternative 4 would require ground disturbance and modification to existing freeway and local street structures. Therefore, all impacts are considered permanent for purposes of this analysis and based on the project design. Therefore, there are no temporary impacts to natural communities associated with Alternative 4. Permanent impacts are discussed below.

2.17.2.2 Permanent Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

The No Build Alternative would not result in the construction and modification to existing freeway and local street structures. Therefore, the No Build Alternative would not result in any adverse permanent impacts to natural communities in the BSA.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

The majority of the BSA is considered to be highly disturbed and dominated by ruderal and ornamental species. The project would not affect southern willow scrub, a natural community of concern. In addition, the project would not substantially affect the willow scrub/mature individual willows and mule fat scrub communities. The project would not have substantial adverse effects to disturbed/ruderal, disturbed Riversidean sage scrub, mule fat scrub, and ornamental communities within the BSA as these communities are disturbed by existing development and the impacts to these communities are relatively small. Given the highly disturbed nature of the site, effects to natural communities are not considered adverse.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

Alternative 3 would have the same impacts as identified for Alternative 2. The project would not adversely affect natural communities of concern.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

Alternative 4 would have the same impacts as identified for Alternative 2. The project would not adversely affect natural communities of concern

CEQA DISCUSSION

Would the project:

IV. d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

No Impact. Wildlife movement includes seasonal migration along corridors, as well as daily movements for foraging and reaching water sources. Migrational corridors may include areas of unobstructed movement for deer, riparian corridors providing cover for migrating birds, routes between breeding waters and upland habitat for amphibians, and between roosting and feeding areas for birds. The San Jacinto River, where it passes under the I-15 within the BSA, likely provides for some level of regional wildlife movement. No direct effects to the San Jacinto River would occur as a result of the project. The project site is not adjacent to any existing or proposed linkage or core areas as identified in the MSHCP. With adherence to **Minimization Measures AN-6** and **AN-8**, no impact would occur. No mitigation is required.

IV. e) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

Less Than Significant with Mitigation. A *Multiple Species Habitat Conservation Plan Consistency Assessment* (August 2017)[1] was prepared for the project. As described in Sections 2.18 and 2.19 of this IS/EA, the project would not conflict with the provisions of the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) with implementation of the identified mitigation and minimization measures. With implementation of **Mitigation Measure AN-1**, if burrowing owls are discovered during the pre-construction surveys, project-specific mitigation would be required. Mitigation measures would be developed and authorized through consultation with CDFW and USFWS, and would comply with the standards specified in MSHCP Table 9.2 and Appendix E, Summary of MSHCP Species Survey Requirements. In addition, implementation of **Minimization Measures AN-2** through **AN-9**, presented below in Section 2.20.4, and **Minimization Measures TE-1** through **TE-3**, presented below in section 2.21.4, would further minimize potential impacts and ensure that impacts remain less than significant.

X. c) Conflict with an applicable habitat conservation plan or natural community conservation plan?

Less Than Significant With Mitigation. The project would not conflict with any habitat conservation plan or natural community conservation plan with implementation of the identified

[1] LSA Associates, Inc. 2017. *Multiple Species Habitat Conservation Plan Consistency Assessment Interstate 15/Railroad Canyon Road Interchange Project*. June.

mitigation and minimization measures. With implementation of **Mitigation Measure AN-1**, presented below in Section 2.20.4, if burrowing owls are discovered during the pre-construction surveys, project-specific mitigation would be required. Mitigation measures would be developed and authorized through consultation with CDFW and USFWS, and would comply with the standards specified in MSHCP, Table 9.2, and Appendix E, Summary of MSHCP Species Survey Requirements. In addition, with implementation of **Minimization Measures AN-6 and AN-7**, presented below in Section 2.20.4, and **TE-4, TE-6,** and **TE-7**, presented below is Section 2.21.4, potential conflicts with applicable habitat conservation plan or natural community conservation plan would be minimized and ensure that impacts remain less than significant.

XVIV. a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

Less Than Significant with Mitigation. Based on the above evaluations and discussions, the project has a very limited potential to incrementally degrade the quality of the environment because the site was previously developed, is not in an environmentally sensitive location, and is consistent with the City's General Plan. As a result, with the implementation of **Mitigation Measure AN-1** and **WET-4** and **Minimization Measures WET-1** through **WET-3, AN-2** through **AN-9, TE-1** through **TE-3**, and **I-1,** the project would not significantly affect the environment.

2.17.3 Avoidance, Minimization, and/or Mitigation Measures

With implementation of **Measures AN-2**, **AN-3**, **AN-5** (in Section 2.20.4, below), and **IS-1** (in Section 2.22.4, below), potential permanent effects to willow scrub/mature individual willows and mule fat scrub communities would not be adverse.

This page intentionally left blank

2.18 Wetlands and Other Waters

2.18.1 Regulatory Setting

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the Federal Water Pollution Control Act, more commonly referred to as the Clean Water Act [CWA (33 USC 1344)] is the primary law regulating wetlands and surface waters. One purpose of the CWA is to regulate the discharge of dredged or fill material into waters of the U.S., including wetlands. Waters of the United States (waters of the U.S.) include navigable waters, interstate waters, territorial seas and other waters that may be used in interstate or foreign commerce. To classify wetlands for the purposes of the CWA, a three-parameter approach is used that includes the presence of hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (soils formed during saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the CWA.

Section 404 of the CWA establishes a regulatory program that provides that discharge of dredged or fill material cannot be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. The Section 404 permit program is run by the U.S. Army of Engineers (USACE) with oversight by the United States Environmental Protection Agency (U.S. EPA).

The USACE issues two types of 404 permits: General and Standard permits. There are two types of General permits: Regional Permits and Nationwide Permits. Regional Permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide Permits are issued to allow a variety of minor project activities with no more than minimal effects.

Ordinarily, projects that do not meet the criteria for a Nationwide Permit may be permitted under one of USACE's Standard permits. For Standard permits, the USACE decision to approve is based on compliance with U.S. EPA's Section 404(b)(1) Guidelines (U.S. EPA 40 CFR Part 230), and whether permit approval is in the public interest. The Section 404 (b)(1) Guidelines were developed by the U.S. EPA in conjunction with USACE, and allow the discharge of dredged or fill material into the aquatic system (waters of the U.S.) only if there is no practicable alternative, which would have less adverse effects. The Guidelines state that USACE may not issue a permit if there is a least environmentally damaging practicable alternative (LEDPA) to the proposed discharge that would have lesser effects on waters of the U.S., and not have any other significant adverse environmental consequences.

The Executive Order for the Protection of Wetlands (EO 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, this executive order states that a federal agency, such as the Federal Highway Administration (FHWA) and/or the California Department of Transportation (Caltrans), as assigned, cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds: (1) that there is no practicable alternative to the construction, and (2) the project includes all practicable measures to minimize harm.

At the state level, wetlands and waters are regulated primarily by the State Water Resources Control Board (SWRCB), the Regional Water Quality Control Boards (RWQCB), and the California Department of Fish and Wildlife (CDFW). In certain circumstances, the Coastal Commission (or Bay Conservation and Development Commission or Tahoe Regional Planning Agency) may also be involved. Sections 1600–1607 of the California Fish and Game Code require any agency that proposes a project that would substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify CDFW before beginning construction. If CDFW determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement will be required. CDFW jurisdictional limits are usually defined by the tops of the stream or lake banks, or the outer edge of riparian vegetation, whichever is wider. Wetlands under jurisdiction of the USACE may or may not be included in the area covered by a Streambed Alteration Agreement obtained from the CDFW.

The RWQCBs were established under the Porter-Cologne Water Quality Control Act to oversee water quality. Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements (WDRs) and may be required even when the discharge is already permitted or exempt under the CWA. In compliance with Section 401 of the CWA, the RWQCBs also issue water quality certifications for activities which may result in a discharge to waters of the U.S. This is most frequently required in tandem with a Section 404 permit request. Please see the Water Quality section for additional details.

2.18.2 Affected Environment

This section is based on the following documents prepared for the report:

- *Natural Environment Study* (NES) (August 2017)
- *Update to the Natural Environment Study Memorandum* (NES Memorandum) (January 2015)
- *Wetlands Delineation and Assessment of Jurisdictional Waters Report* (August 2017)

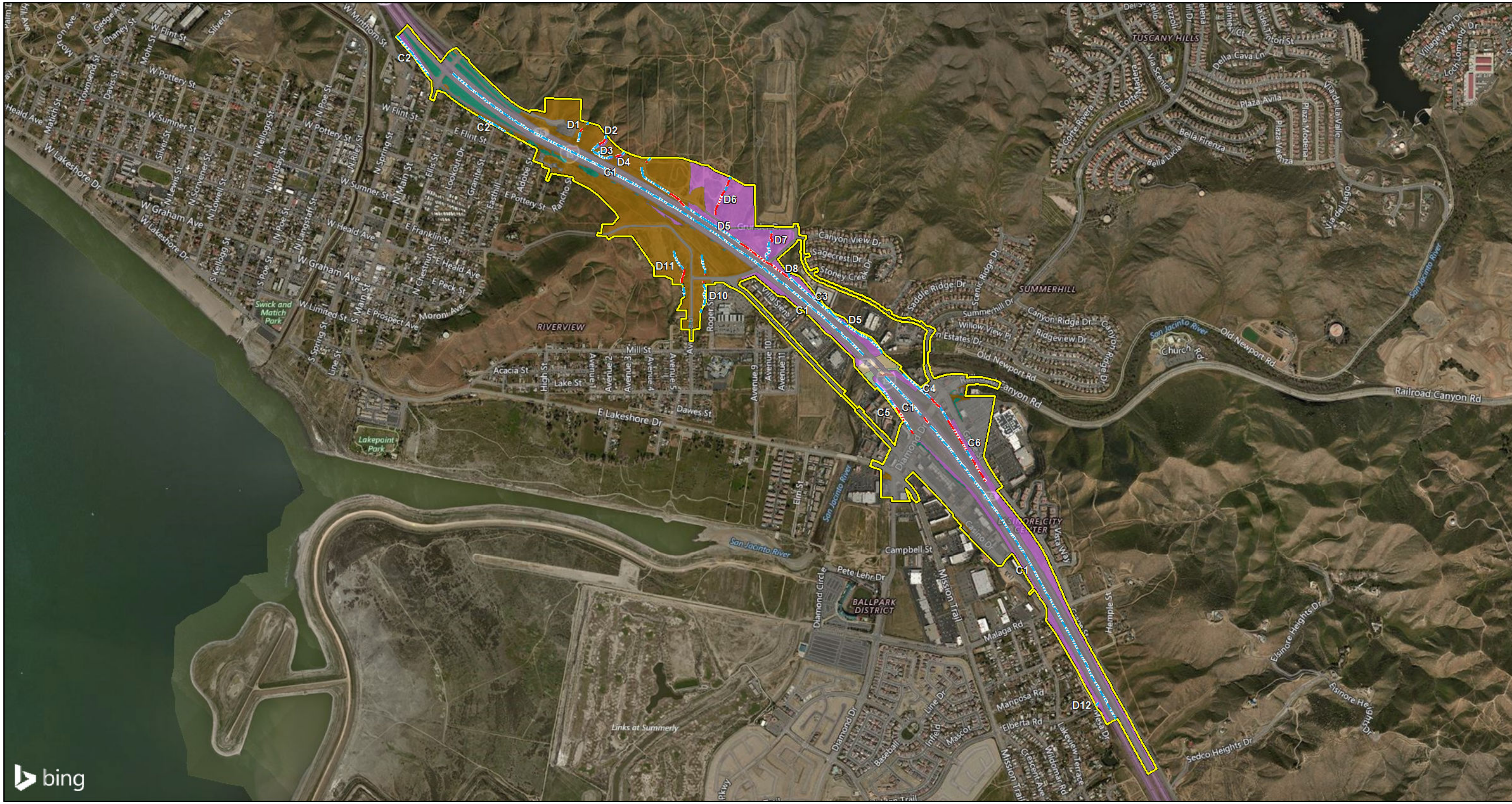
As discussed in more detail in Section 2.11, the project site is situated within Lake Elsinore Valley along the base of the Sedco Hills and Steele Peak. The Biological Study Area (BSA) intersects the San Jacinto River at the mouth of Railroad Canyon. Due to the proximity to hillside drainages and the river, several drainage features were identified within the BSA (including man-made channels and natural drainage features). The new BSA associated with Alternative 4 does not contain wetlands or waters subject to the regulatory authority of the USACE under Section 404 of the Federal CWA, the RWQCB under Section 401 of the CWA, or the CDFW under Sections 1600 et seq. of the California Fish and Game Code. Based on the results of the Wetlands and Jurisdictional Delineation (Appendix H of the NES) for the project, the potentially jurisdictional areas in the BSA are identified in Figure 2.18.1, summarized in Table 2.18.A, and discussed in more detail below.

2.18.2.1 Riparian/Riverine Resources and Vernal Pools

Southern willow scrub and mule fat scrub vegetation is present within the San Jacinto River (Drainage D6) in the BSA. In addition, mule fat scrub is present within concrete-lined drainage C4, and willow scrub is present within concrete-lined drainage C2. According to the 2015 NES Memorandum, the new BSA associated with Alternative 4 is located in the Elsinore Area Plan of the MSHCP, which does not contain MSHCP riparian/riverine/vernal pool resources.

2.18.2.2 USACE Jurisdictional Areas

Table 2.18.A identifies potential jurisdictional waters of the U.S./CDFW streambed within the BSA. The conclusions are subject to verification by the USACE, RWQCB, and CDFW (regulatory agencies). For this project, a Preliminary Jurisdictional Determination will be pursued. A preliminary determination is a non-binding indication there “may be” waters of the



Biological Study Area (BSA)

Photograph location and direction taken

Vegetation

Ornamental

Southern Willow Scrub

Willow Scrub/Individual Mature Willows

Disturbed Riversidean Sage Scrub

Mule Fat Scrub

Developed

Disturbed/Ruderal

Potential Waters of the U.S./Streambed

C1/D1 Impacted

C1/D1 Non-Impacted

N

0 750 1,500

FEET

SOURCE: Bing Aerial, 2015; LSA Associates, Inc., 2014

I:\SAE1401\Reports\IS_EA\fig2-18-1_Potential_Juri_Areas.mxd (7/7/2017)

FIGURE 2.18.1

08-RIV-15-PM 18.3/21.0
EA. 0A4400
I-15/Railroad Canyon Road Interchange
Initial Study/Environmental Assessment

Potential Jurisdictional Areas within the BSA

This page intentionally left blank

Table 2.18.A: Potential Waters of the United States/CDFW Streambed

Drainage Feature and Length (ft)	Acres		
	USACE Wetland Waters	**USACE Nonwetland Waters**	**CDFW Jurisdictional Streambed/Riparian Habitat**
D1 383.415	None	0.018	0.044
D2 361.889	None	0.008	0.008
D3 238.393	None	0.005	0.005
D4 506.197	None	0.019	0.132
D5 4,968.172	None	0.506	0.506
D6 667.157	None	0.025	0.025
D7 549.496	None	0.051	0.355
D8 160.818	None	0.030	0.030
D9 562.000	2.838	0	3.929
D10 808.160	None	0.037	0.037
D11 739.136	None	0.449	0.665
D12 62.041	None	0.006	0.006
C1 14,213.181	None	None	None
C2 1,310.862	None	None	None Artificial drainage with natural characteristics, but is transient
C3 100.474	None	None	None
C4 577.981	None	None	None Artificial drainage with natural characteristics, but is transient
C 999.242	None	None	None
C6 1,414.020	None	None	None Artificial drainage with natural characteristics, but is transient
TOTALS	**2.838**	**1.155**	**5.742**

Source: *Natural Environment Study* (August 2017).
CDFW = California Department of Fish and Wildlife
USACE = U.S. Army Corps of Engineers

U.S. on the project site. For the purposes of determining impacts, compensatory mitigation, and avoidance and minimization measures, a preliminary determination will treat all waters and wetlands affected by the project as if they are jurisdictional waters of the U.S.

All natural drainages (Drainages D1 through D12) are jurisdictional under current CWA regulations as implemented by the USACE. All of these drainages were naturally occurring prior to the construction of I-15 and build out of the adjacent development. All drainages are now directed into culverts, storm drains, diverted by roads and other fill, and disturbed by current land uses. The following conclusions are based on the observations of trained and experienced wetlands and jurisdictional waters delineators applying pertinent manuals, regulations, and guidance to the conditions observed within the study area.

The ordinary high water marks (OHWMs)[1] are visible in most of the project drainages; are now converted into concrete-lined channels (Drainage D5); or are diverted into a storm drain (Drainages D1, D2, D3, D4, D6, D7, D8, D10, D11, and D12). USACE jurisdiction is based on connectivity to regularly perennial waters (San Jacinto River and Lake Elsinore) that have nexus to Federal jurisdictional waters, like the Pacific Ocean. Existing contiguity to the Walker Canyon, San Jacinto River, or Lake Elsinore is not confirmed in the field. However, Sedco Hills and associated topography drain in a southwesterly direction to Lake Elsinore Valley or the San Jacinto River (Drainage D9).

Out of the identified drainages within the BSA, the San Jacinto River is the only drainage (Drainage D9) with intermittent water, hydric soils, and developed riparian/riverine habitat. All other drainages in the BSA are considered ephemeral. Drainage D1, D6, and D12 contain ruderal and nonnative grassland species. Drainages D2, D3, and D7 are vegetated by riversidean sage scrub and ruderal and nonnative grassland species Drainages D4 and D11 are primarily dominated by ruderal vegetation but also contains some riparian/riverine type vegetation, consisting of arroyo willow, blue elderberry, and tamarisk where it drains to a culvert under I-15. The upper end of Drainage D5 is vegetated by ruderal and nonnative grassland species before it turns into a concrete-lined channel Drainage D10 is vegetated by RSS in the northerly portions of the drainage not subject to disking and by ruderal and nonnative grassland species on the southerly disked portions. Drainages D8 is devoid of vegetation.

The other drainage features identified as Drainages C1 through C6 are not natural drainages. These drainage features were constructed as part of another separate project along the I-15 corridor and consist of concrete-lined linear channels that are aligned parallel to I-15 or the access ramps. These concrete channels are not jurisdictional under current CWA regulations, per *Rapanos* guidelines, since they were "excavated wholly in and draining only uplands and do not carry a relatively permanent flow of water."

2.18.2.3 CDFW Jurisdictional Areas

The CDFW regulates wetland areas only to the extent that those wetlands are part of a river, stream, or lake as defined by the CDFW. CDFW jurisdiction typically extends beyond the streambed/banks to the limits of the riparian vegetation (if present) associated with streams, rivers, or lakes.

---

[1] An ordinary high water mark (OHWM) is the point on a stream bank to which the presence and action of surface water is so continuous as to leave a district marked by erosion; destruction or prevention of woody terrestrial vegetation; predominance of aquatic vegetation; or other easily recognized characteristic.

All natural drainages are considered jurisdictional according to current CDFW regulations. Drainage D8 is concrete lined and devoid of vegetation and does not contain the attributes of a natural waterway; however, because this drainage directly drains a natural drainage feature, it is considered subject to the regulatory authority of the CDFW. The remaining drainages are soft-bottomed drainage channels, and provide evidence of distinct banks. The channel beds and the USACE OHWMs of many of these drainages were not distinguishable due to disturbance from disking, grading, and storm drain diversion.

As identified in previously referenced Table 2.18.A, Drainages D4, D9, and D11 are the only natural drainages containing riparian habitat. The remaining drainages are vegetated by native and nonnative upland vegetation (Drainages D1 through D3, D7, D10, and D12), or are devoid of vegetation (Drainage D8). The other drainage features identified as Drainages C1 through C6 are not natural drainages but were constructed as part of a separate project along the I-15 corridor. Although Drainages C2 through C4 and C6 contain riparian vegetation such as mule fat and willow saplings, these drainages are maintained for flood control purposes. Because of maintenance activities, this vegetation will not persist and is not considered a natural feature of these constructed drainages. Therefore, Drainages C1through C6 are not considered jurisdictional under current CDFW regulation.

Following approval of the environmental document and as part of the permit process during the Plans, Specifications, and Estimates (PS&E) phase (final design), the USACE will review the Jurisdictional Delineation and the final design plans and provide final concurrence on the Jurisdictional Delineation.

2.18.2.4 RWQCB Jurisdictional Areas

Jurisdiction of the RWQCB coincides with that of the USACE. It is anticipated the RWQCB would regulate the same waters subject to USACE jurisdiction identified above.

2.18.3 Environmental Consequences

2.18.3.1 Temporary Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

The No Build Alternative would not involve construction activities associated with the Build Alternatives; therefore, no temporary impacts to potentially jurisdictional waters would occur.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

There is the potential for temporary indirect water quality impacts through sediment introduction and transport downstream under Alternative 2. Refer to the discussion in Section 2.11 regarding this issue. Identification and implementation of erosion, sedimentation, and pollution prevention best management practices (BMPs) in the Storm Water Pollution Prevention Plan (SWPPP; refer to Section 2.11) for the project would avoid or minimize indirect impacts to jurisdictional waters during construction. With implementation of the measures outlined below in Section 2.18.4, in addition to the water quality measures presented in Section 2.11, potential temporary impacts to wetlands and other waters would not be adverse under this alternative.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

Similar to Alternative 2, there is the potential for temporary indirect water quality impacts through sediment introduction and transport downstream under Alternative 3. Identification and implementation of erosion, sedimentation, and pollution prevention BMPs in the SWPPP (refer to Section 2.11) for the project would avoid or minimize indirect impacts to jurisdictional waters during construction. With implementation of the measures outlined below in Section 2.18.4, in addition to the water quality measures presented in Section 2.11, potential temporary impacts to wetlands and other waters would not be adverse.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

Similar to Alternative 2, there is the potential for temporary indirect water quality impacts through sediment introduction and transport downstream under Alternative 4. Identification and implementation of erosion, sedimentation, and pollution prevention BMPs in the SWPPP (refer to Section 2.11) for the project would avoid or minimize indirect impacts to jurisdictional waters during construction. With implementation of the measures outlined below in Section 2.18.4, in addition to the water quality measures presented in Section 2.11, potential temporary impacts to wetlands and other waters would not be adverse.

2.18.3.2 Permanent Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

The No Build Alternative would not result in permanent impacts to potentially jurisdictional waters.

ALL BUILD ALTERNATIVES (ALTERNATIVES 2, 3, AND 4)

Based on information in the 2017 NES, the Biological Study Area (BSA) encompasses 1.155 acres of potential jurisdictional non-wetland waters of the U.S., and 2.838 acres of wetland waters of the U.S. subject to USACE and RWQCB regulatory authority. Of the total jurisdictional area identified, there would be permanent effects to 0.211 acre of potential jurisdictional non-wetland waters of the U.S. No wetland waters of the U.S. would be affected. The BSA also includes 5.742 acres of streambed/riparian habitat subject to CDFW jurisdiction. Of the total jurisdictional area identified, 0.280 acre of CDFW regulated streambed would be permanently affected. Permits will be required for project effects and include a CWA Section 404 permit authorization from the USACE, a CWA Section 401 Water Quality Certification from the RWQCB, and a Fish and Game Code Section 1602 Streambed Alteration Agreement from the CDFW.

Impacts to potential waters of the U.S./streambeds are summarized in Table 2.18.B, below.

Table 2.18.B Project Impacts: Wetlands and Other Waters[1]

USACE	
Nonwetland Waters (Drainages D1 through D8 and D10 through D12)	0.211 ac
Wetland Waters (Drainage D9)	0.00 ac
Total Jurisdictional Waters: USACE	**0.211 ac**
CDFW	
Streambed/Riparian (Drainages D1 through D12)	0.280 ac
Total Streambed/CDFW Jurisdiction	**0.280 ac**

Source: *Natural Environment Study* (2017).
[1] Impacts are the same for Alternative 2 and Alternative 3 and Alternative 4 .
ac = acre/acres
CDFW = California Department of Fish and Wildlife
USACE = United States Army Corps of Engineers

With implementation of **Measures WET-1** through **WET-3**, which are provided below, the potential permanent project impacts to potential USACE non-wetland waters and CDFW jurisdictional areas would not be adverse.

CEQA DISCUSSION

Would the project:

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

Less Than Significant Impact. As previously identified, the project site is within a previously disturbed semi-urban area and the project limits generally occur within the existing State and City rights-of-way. Implementation of the project would not have an adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans. However, implementation of the project has the potential to spread invasive species by the entering and exiting of construction equipment contaminated by invasive species, the inclusion of invasive species in seed mixtures and mulch, disturbances to soil surfaces, and improper removal and disposal of invasive species that results in the seed being spread along the highway. This may potentially affect existing habitat in the project vicinity. With implementation of **Minimization Measure IS-1**, presented below in Section 2.22.4, potential project-related permanent impacts related to invasive species would be minimized and less than significant.

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

Less Than Significant Impact. Based on information provided in the NES and the *Wetlands Delineation and Assessment of Jurisdictional Waters Report* (August 2017) prepared for the project, the project has the potential to permanently affect jurisdictional non-wetland waters of the U.S. No wetland waters of the U.S. will be affected. In addition, a CDFW regulated streambed will be permanently affected by the project. Permits will be required for project effects and include a CWA Section 404 permit authorization from the USACE, a CWA Section 401 Water Quality Certification from the RWQCB, and a California Fish and Game Code Section 1602 Streambed Alteration Agreement from the CDFW.

With implementation of **Minimization Measures WET-1** through **WET-3** and **Mitigation Measure WET-4**, presented below in Section 2.18.4, the potential permanent project impacts to potential USACE non-wetland waters and CDFW jurisdictional areas would be minimized and remain less than significant.

2.18.4 Avoidance, Minimization, and/or Mitigation Measures

As presented previously in **Measure WQ-1** in Section 2.11, erosion control, sedimentation control, and pollution prevention BMPs would be implemented during construction, as specified in the SWPPP. In addition, as specified in **Measure WQ-2** in Section 2.11, construction within the drainages would be limited to outside the rainy season to minimize erosion and sediment deposition within the drainages. In addition, the following measures are required to avoid, minimize, and/or mitigate potential project impacts to waters of the U.S and for compliance with MSHCP, Volume 1, Appendix C, Standard Best Management Practices:

Minimization Measures

WET-1 Prior to completion of final design, Caltrans shall submit the Jurisdictional Delineation to the United States Army Corps of Engineers (USACE). Caltrans shall obtain the Preliminary Jurisdictional Determination from USACE during the Plans, Specifications, and Estimates (PS&E) phase. In addition, prior to completion of final design, the City of Lake Elsinore (City) shall submit a Pre-Construction Notification form to the USACE to obtain coverage under Nationwide Permits 14 and 33, pursuant to Section 404 of the Federal Clean Water Act (CWA). Any related measures associated with these permits will be implemented and will be incorporated into the Environmental Commitments Record prior to Ready to List.

WET-2 Prior to completion of final design, the City shall obtain a certification of water quality or waiver from the Santa Ana Regional Water Quality Control Board (RWQCB) Region 8, pursuant to Section 401 of the CWA.

WET-3 Prior to completion of final design, the City shall obtain a letter of nonjurisdiction or a Section 1602 Streambed Alteration Agreement from the California Department of Fish and Wildlife (CDFW). Measures required by the Section 1602 permit that would be issued by the CDFW prior to construction will be implemented and will also be incorporated into the Environmental Commitments Record prior to project construction.

Mitigation Measure

WET-4 For impacts to streambed and non-wetland waters, the City will purchase credits from a USACE- and CDFW-approved mitigation bank in the form of habitat enhancement, habitat creation, or a combination of habitat enhancement and habitat creation. Mitigation ratios for impacts to waters typically vary from 1:1 to 5:1. Negotiation with the USACE and the CDFW will take place to establish final mitigation ratios.

2.19 Plant Species

2.19.1 Regulatory Setting

The U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) have regulatory responsibility for the protection of special-status plant species. “Special-status” species are selected for protection because they are rare and/or subject to population and habitat declines. Special status is a general term for species that are afforded varying levels of regulatory protection. The highest level of protection is given to threatened and endangered species; these are species that are formally listed or proposed for listing as endangered or threatened under the Federal Endangered Species Act (FESA) and/or the California Endangered Species Act (CESA). Please see the Threatened and Endangered Species, Section 2.21, later in this document for detailed information regarding these species.

This section of the document discusses all the other special-status plant species, including CDFW species of special concern, USFWS candidate species, and California Native Plant Society (CNPS) rare and endangered plants.

The regulatory requirements for FESA can be found at United States Code 16 (USC), Section 1531, et seq. See also 50 Code of Federal Regulations (CFR) Part 402. The regulatory requirements for CESA can be found at California Fish and Game Code, Section 2050, et seq. Department projects are also subject to the Native Plant Protection Act, found at California Fish and Game Code, Section 1900-1913, and the California Environmental Quality Act (CEQA), Public Resources Code, Sections 2100-21177.

2.19.1.1 Western Riverside County MSHCP

The Multiple Species Habitat Conservation Plan (MSHCP) provides for the assembly of conservation lands consisting of Core Areas and Linkages for the conservation of covered species. The conservation areas are to be assembled from portions of the MSHCP Criteria Area, which consist of quarter-section (i.e., approximately 160 acres) “criteria cells” each with specific criteria for the species conservation within that cell. Additionally, the MSHCP requires habitat suitability assessments and focused surveys to be conducted for certain species and complying with implementation policies, such as Protection of Species Associated with Riparian/Riverine Areas and Vernal Pools (MSHCP, Section 6.1.2).

2.19.2 Affected Environment

This section is based on the following documents prepared for the project:

- *Natural Environment Study* (August 2017)
- *Update to the Natural Environment Study* (NES Memorandum) (January 2015)

In the summer of 2014, the Project Development Team (PDT) and the City of Lake Elsinore introduced Alternative 4. The NES Memorandum was prepared to address Alternative 4 and to determine whether the recommendations contained in the NES prepared in 2010 and updated in 2017, which address Alternatives 2 and 3, are sufficient to address Alternative 4.

Sensitive biological resources that could potentially occur within the project area were identified through literature review and on-site field investigations. In addition, the presence, or likelihood of presence, of sensitive species was based on the following criteria (in descending order, from species determined to be present to those considered potentially present): (1) direct observation of the species or its sign in the study area or immediate vicinity during surveys conducted for this study or reported in previous biological studies; (2) sighting by other qualified observers;

(3) record reported by the California Natural Diversity Database (CNDDB), published by the CDFW; (4) presence or location of specific species lists provided by private groups (e.g., CNPS); and (5) location of the study area lies within known distribution of a given species and containing appropriate habitat.

A reconnaissance-level survey of the Biological Study Area (BSA) associated with Alternatives 2 and 3 was conducted on July 6, 2009, May 3, 2017, and June 13, 2017, to generally characterize the biological resources on the site and to ascertain the presence or absence of special-status plants or the likelihood of their occurrence for the 2017 NES. The survey evaluated the BSA based on existing conditions, with particular focus on the native vegetation and sensitive species. In addition, a pedestrian survey was conducted by Denise Woodard, consulting biologist and author of the 2017 NES, on December 11, 2014, to examine the BSA associated with Alternative 4.

Vegetation within the BSA has been affected by the existing Interstate 15 (I-15) infrastructure, paved and dirt roadways, residential and commercial development, off-road vehicle use, and disking practices. Aside from developed areas, the BSA contains six vegetation communities: disturbed/ruderal, disturbed Riversidean sage scrub (RSS), southern willow scrub, willow scrub, mule fat scrub, and ornamental. The dominant vegetation community within the BSA is disturbed/ruderal.

Habitat for six non-Federal/State listed plant species was identified as potentially present within the BSA based on the presence of suitable vegetation and/or soils and includes the following:

- Chaparral sand-verbena (*Abronia villosa* var. *aruita*)
- Plummer's mariposa lily (*Calochortus plummerae*)
- Parry's spineflower (*Chorizanthe parryi* var. *parryi*)
- Mesa horkelia (*Horkelia cuneata*)
- White rabbit tobacco (*Psuedognaphalium leucocephalum*)
- Coulter's Matilija poppy (*Romneya coulteri*)

2.19.3 Environmental Consequences

2.19.3.1 Temporary Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

Under the No Build Alternative, no construction would occur, and there would be no impacts to special-status plant species.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

Alternative 2 would require ground disturbance and modification to existing freeway and local street structures. These construction activities could result in impacts to plant resources. The potential impacts to such biological resources would be permanent impacts and are addressed below. Any analysis of temporary impacts is not applicable.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

Alternative 3 would require ground disturbance and modification to existing freeway and local street structures. These construction activities could result in impacts to plant resources. The potential impacts to plant resources would be permanent impacts and are addressed below. Any analysis of temporary impacts is not applicable.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

Alternative 4 would require ground disturbance and modification to existing freeway and local street structures. These construction activities could result in impacts to plant resources. The potential impacts to plant resources would be permanent impacts and are addressed below. Any analysis of temporary impacts is not applicable.

2.19.3.2 Permanent Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

Under the No Build Alternative, no improvements would occur; therefore, no permanent impacts to special-status plant species would occur.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

Implementation of Alternative 2 would result in the loss of a minor number of nonnative trees and shrubs to accommodate the planned improvements and realignment of the ramps. Table 2.19.A provides a summary of impacts to vegetation communities located within the BSA under Alternative 2.

Table 2.19.A: Alternative 2 Impacts to Vegetation and Land Use within the BSA

Vegetation	Total within BSA (Acres)	Impacts (Acres)
Developed	162.68	28.63
Disturbed/Ruderal	80.57	21.0
Disturbed Riversidean Sage Scrub	58.08	15.39
Southern Willow Scrub	1.89	0
Willow Scrub/Mature Individual Willows	0.31	0.01
Mule Fat Scrub	0.96	0
Ornamental	10.49	2.05
Total	**317.0**	**67.09**

Source: *Natural Environment Study* (August 2017).
BSA = Biological Study Area

As identified in Table 2.19.A, although the BSA does contain southern willow scrub (a natural community of special concern by the CDFW and the CNDDB), the project would not affect this natural community of concern. In addition, the project would not substantially affect the willow scrub/mature individual willows and mule fat scrub communities.

The project would not have substantial effects to disturbed/ruderal, disturbed RSS, mule fat scrub, and ornamental communities within the BSA because these communities are disturbed by existing development and the impacts to these communities are relatively small.

Of the six special-status plant species identified as potentially present within the BSA, none of the six species was observed during the reconnaissance-level survey of the BSA. In addition, due to existing disturbances and proximity to surrounding development, the project would not have substantial effects on these species. Further study of these species is not required because they have no official status, habitat in the BSA is considered to be of low value for these species, and the BSA does not lie within an MSHCP survey area for these species.

Because there would be no effects to other special-status plant species, impacts are not considered substantial.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

Implementation of Alternative 3 would result in the loss of a minor number of nonnative trees and shrubs to accommodate the proposed improvements and realignment of the ramps. Table 2.19.B provides a summary of impacts to vegetation communities located within the BSA under Alternative 3.

Table 2.19.B: Alternative 3 Impacts to Vegetation and Land Use within the BSA

Vegetation	Total within BSA (Acres)	Impacts (Acres)
Developed	162.68	32.68
Disturbed/Ruderal	80.57	21.13
Disturbed Riversidean Sage Scrub	58.08	14.99
Southern Willow Scrub	1.89	0
Willow Scrub/Mature Individual Willows	0.31	0.02
Mule Fat Scrub	0.96	0
Ornamental	10.49	2.01
Total	**317.0**	**70.83**

Source: *Natural Environment Study* (August 2017).
BSA = Biological Study Area

As identified in Table 2.19.B, although the BSA does contain southern willow scrub (a natural community of special concern by the CDFW and CNDDB), the project would not affect this natural community of concern. In addition, the project would not substantially affect the willow scrub/mature individual willows and mule fat scrub communities.

The project would not have substantial effects to disturbed/ruderal, disturbed RSS, mule fat scrub, and ornamental communities within the BSA because these communities are disturbed by existing development and the impacts to these communities are relatively small.

The impacts associated with non-Federal/State listed plant species within the BSA would be the same for Alternative 3 as those identified for Alternative 2.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

Implementation of Alternative 4 would result in the loss of a minor number of nonnative trees and shrubs to accommodate the proposed improvements and realignment of the ramps. Table 2.19.C provides a summary of impacts to vegetation communities located within the BSA under Alternative 4.

As identified in Table 2.19.C, although the BSA does contain southern willow scrub (a natural community of special concern by the CDFW and the CNDDB), the project would not affect this natural community of concern. In addition, the project would not substantially affect the willow scrub/mature individual willows and mule fat scrub communities.

Table 2.19.C: Alternative 4 Impacts to Vegetation and Land Use within the BSA

Vegetation	Total within BSA (Acres)	Impacts (Acres)
Developed	162.68	28.63
Disturbed/Ruderal	80.57	21.0
Disturbed Riversidean Sage Scrub	58.08	15.39
Southern Willow Scrub	1.89	0
Willow Scrub/Mature Individual Willows	0.31	0.01
Mule Fat Scrub	0.96	0
Ornamental	10.49	2.05
Total	**317.0**	**67.09**

Source: *Natural Environment Study* (August 2017).
BSA = Biological Study Area

The project would not have substantial effects to disturbed/ruderal, disturbed RSS, mule fat scrub, and ornamental communities within the BSA because these communities are disturbed by existing development and the impacts to these communities are relatively small.

The impacts associated with non-Federal/State listed plant species within the BSA would be the same for Alternative 4 as those identified for Alternative 2.

CEQA DISCUSSION

Would the project:

IV. e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Less Than Significant Impact. The City of Lake Elsinore has determined that several species of palms are important to maintaining the character of the local community and at protecting the local environment. According to the provisions of Ordinance 1044, no Significant Palm may be removed or relocated without a permit from the City of Lake Elsinore's Director of Community Services. Construction of the project will result in the removal of adjacent trees and other mature vegetation, including Significant Palms. The project locations for the Casino Drive hook ramps (Assessor's Parcel Number [APN] 363-171-010), the Railroad Canyon Road roundabouts (APNs 363-140-090, 363-140-091, 363-130-044, 363-172-005), and the Franklin Street expansion at Auto Center Drive (APN 363540017) may result in the removal of Significant Palms from existing commercial areas. As noted above, any removal of a Significant Palm will require a permit from the Director of Community Services. **Minimization Measure VIS-1** through **VIS-3** and **VIS-6**, presented in Section 2.8.4, have been previously identified to reduce impacts related to the removal of trees and mature vegetation during construction of the project. Adherence to **Minimization Measures VIS-1** through **VIS-3** and **VIS-6** would minimize impacts and ensure impacts remain less than significant.

2.19.4 Avoidance, Minimization, and/or Mitigation Measures

With implementation of **Measures AN-2**, **AN-3**, **AN-5** (in Section 2.20.4, below), and **IS-1** (in Section 2.22.4, below), potential permanent effects to willow scrub/mature individual willows and mule fat scrub communities would not be adverse.

This page intentionally left blank

2.20 Animal Species

2.20.1 Regulatory Setting

Many State and federal laws regulate impacts to wildlife. The U.S. Fish and Wildlife Service (USFWS), the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries Service) and the California Department of Fish and Wildlife (CDFW) are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with animals not listed or proposed for listing under the State or Federal Endangered Species Act in Section 2.21 below. All other special-status animal species are discussed here, including CDFW fully protected species and species of special concern, and USFWS or NOAA Fisheries Service candidate species.

Federal laws and regulations pertaining to wildlife include the following:

- National Environmental Policy Act
- Migratory Bird Treaty Act
- Fish and Wildlife Coordination Act

State laws and regulations pertaining to wildlife include the following:

- California Environmental Quality Act
- Sections 1600–1603 of the Fish and Game Code
- Section 4150 and 4152 of the Fish and Game Code

2.20.2 Affected Environment

This section is based on the following documents prepared for this project:

- *Natural Environment Study* (NES) (August 2017)
- *Update to the Natural Environment Study Memorandum* (NES Memorandum) (January 2015)

In the summer of 2014, the Project Development Team (PDT) and the City of Lake Elsinore introduced Alternative 4. The NES Memorandum was prepared to address Alternative 4 and to determine whether the recommendations contained in the NES prepared in 2010 and updated in 2017, which address Alternatives 2 and 3, are sufficient to address Alternative 4.

Sensitive biological resources that could potentially occur within the project area were identified through literature review and on-site field investigations. In addition, the presence, or likelihood of presence, of sensitive species was based on the following criteria (in descending order, from species determined to be present to those considered potentially present): (1) direct observation of the species or its sign in the study area or immediate vicinity during surveys conducted for this study or reported in pervious biological studies; (2) sighting by other qualified observed; (3) record reported by the California Natural Diversity Database (CNDDB) published by CDFW; (4) presence or location of specific species lists provided by private groups (e.g., California Native Plant Society [CNPS]); and (5) location of the study area lies within known distribution of a given species and containing appropriate habitat.

Prior to on-site biological surveys, a literature review and records search were conducted to identify the existence or potential occurrence of sensitive or special-status biological resources (e.g., animal species) in or within the vicinity of the Biological Study Area (BSA) for both the 2017 NES and the 2015 NES Memorandum. The BSA for the project includes the entire proposed ground disturbance area associated with the interchange, including the grading limits and staging areas. The BSA is defined by the project limits and extends along Interstate 15 (I-15) approximately 0.5 mile east of Lake Elsinore and is situated within Lake Elsinore Valley along the base of the Sedco Hills and Steele Peak. The results of the literature review indicated the potential occurrence of 25 non-listed special-interest animal species in the BSA. The BSA for Alternative 4 assessed in the 2015 NES Memorandum is located along Railroad Canyon Road and includes Mission Trail-Lake Shore Drive and Grape Street-Summerhill Drive. These areas are highly developed with primarily commercial uses.

A reconnaissance-level survey of the BSA associated with Alternatives 2 and 3 was conducted on July 6, 2009, May 3, 2017, and June 13, 2017, to generally characterize the biological resources on the site and to ascertain the presence or absence of Federal/State listed or special-status animals or the likelihood of their occurrence. The survey evaluated the BSA based on existing conditions, with particular focus on the native vegetation and sensitive species. In addition, a pedestrian survey was conducted by Denise Woodard, consulting biologist and author of the 2017 NES, on December 11, 2014, to examine the BSA associated with Alternative 4.

Four special-interest animal species were observed or otherwise detected in the BSA during the site visit. These include orange-throated whiptail (*Aspidoscelis hyperythra*), Cooper's hawk (*Accipiter cooperii*), California horned lark (*Eremophila alpestris actia*), and San Diego black-tailed jackrabbit (*Lepus californicus bennettii*). In addition, a focused survey was conducted for burrowing owl (*Athene cunicularia*). No additional special-interest animal species were observed or otherwise detected in the BSA associated with Alternative 4, based on the research conducted for the 2015 NES Memorandum.

Common animal species identified in the BSA include checkered white (*Pontia protodice*), American crow (*Corvus brachyrhynchos*), house finch (*Carpodacus mexicanus*), western meadowlark (*Sturnella neglecta*), and California ground squirrel (*Spermophilus beecheyi*). Appendix D of the 2017 NES provides a complete list of plant and animal species observed. No additional common animal species have the potential to occur within the BSA associated with Alternative 4.

The BSA does not appear to function as a wildlife movement corridor. Much of the habitat within the BSA has been fragmented by I-15 and residential and commercial development. I-15 is a regional barrier to east and west wildlife movement through the BSA and surrounding areas. The San Jacinto River, where it passes under the I-15 within the BSA, likely provides for some level of regional wildlife movement.

2.20.3 Environmental Consequences

2.20.3.1 Temporary Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

Under the No Build Alternative, no construction would occur, and there would be no impacts to special-status animal species.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

Construction of Alternative 2 would not cause impacts to any wildlife movement corridors. However, temporary indirect impacts may occur as a result of construction-related impacts such as dust, potential fuel spills from construction equipment, possible night lighting during construction, and activities of equipment or personnel outside designated construction areas as well as operation impacts such as any on adjacent habitats caused by storm water runoff, traffic, and litter.

The BSA indicates potentially suitable nesting habitat for several bird species including: Cooper's hawk, sharp-shinned hawk (*Accipiter striatus*), Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*), Bell's sage sparrow (*Amphispiza belli belli*), burrowing owl, California horned lark, and white-tailed kite (*Elanus leucurus*). Two of these species, Cooper's hawk and California horned lark were found to be present within the BSA. With implementation of **Measures AN-2** and **AN-3**, provided below, potential temporary impacts during project construction to migratory birds would not be adverse.

The project site was also found to contain potentially suitable habitat for the burrowing owl in the form of disturbed Riversidean sage scrub (RSS) and disturbed/ruderal habitats within the BSA. No burrowing owl sign was detected within the BSA during the spring 2009 focused survey or the 2014 pedestrian survey of the area included within the BSA as a result of Alternative 4; however, the species is highly mobile and has the potential to move onto the project site prior to construction. With implementation of **Measure AN-1**, provided below, potential temporary impacts during project construction to burrowing owls would not be adverse under this alternative. No mitigation is required if impacts are avoided as stated above; however, if burrowing owls are discovered during subsequent surveys, project-specific mitigation would be required. Mitigation measures would be developed and authorized through consultation with the CDFW and the USFWS, as outlined in the Multiple Species Habitat Conservation Plan (MSHCP), Table 9.2, and Appendix E of this document, Summary of MSHCP Species Survey Requirements.

Two special-status bat species were identified as having the potential to be present within the BSA: western mastiff bat (*Eumops perotis*) and western yellow bat (*Lasiurus xanthinus*). The bridges spanning over the San Jacinto River contain suitable bat night-roosting habitat (i.e., crevices). Bats that utilize crevices, including the western mastiff bat, may use existing bridges within the project limits. The BSA does not contain suitable roosting habitat for the western yellow bat. Avoidance and minimization measures are identified below to address potential impacts to bat species.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

Construction of Alternative 3 would not cause any impacts to wildlife movement corridors. However, temporary indirect impacts may occur as a result of construction-related impacts such as dust, potential fuel spills from construction equipment, possible night lighting during construction, and activities of equipment or personnel outside designated construction areas as well as operational impacts, such as any impacts on adjacent habitats caused by storm water runoff, traffic, and litter. Alternative 3 would have the same temporary impacts as identified for Alternative 2. The same avoidance and minimization measures identified for Alternative 2 would apply for Alternative 3.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

Construction of Alternative 4 would not cause any impacts to wildlife movement corridors. However, temporary indirect impacts may occur as a result of construction-related impacts such as dust, potential fuel spills from construction equipment, possible night lighting during construction, and activities of equipment or personnel outside designated construction areas as well as operational impacts, such as any impacts on adjacent habitats caused by storm water runoff, traffic, and litter. Alternative 4 would have the same temporary impacts as identified for Alternatives 2 and 3. The same avoidance and minimization measures identified for Alternative 2 would apply for Alternative 4.

2.20.3.2 Permanent Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

Under the No Build Alternative, no improvements would occur; therefore, no permanent impacts to animal species would occur.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

Implementation of the Build Alternatives would result in the loss of a minor number of nonnative trees and shrubs to accommodate the planned improvements and realignment of the ramps. As previously discussed, habitat for 25 non-listed special-status animal species was identified as potentially present within the BSA.

According to the 2017 NES, four of the 25 non-listed special-status species were found to be present within the BSA: Orange-throated whiptail, Cooper's hawk, California horned lark, and San Diego black-tailed jackrabbit. The burrowing owl was found to be absent during the 2009 focused survey. These 25 species are not Federal/State listed species, but are of limited distribution in Southern California. Ongoing development is further reducing their ranges and numbers. These species have no official status but under CEQA, they require consideration. Due to the marginal, disturbed nature of the existing habitat conditions within the BSA, the project would not have substantial effects on these species.

In addition, 15 of the 25 species are considered to be adequately conserved under the MSHCP and are listed below:

1. Western spadefoot (*Spea hammondii*)
2. Belding's orange-throated whiptail (*Aspidoscelis hyperythra beldingi*)
3. Coastal western whiptail (*Aspidoscelis tigris stejnegeri*)
4. Red diamond rattlesnake (*Crotalus ruber*)
5. Blainville's horned lizard (*Phrynosoma blainvillei*)
6. Cooper's hawk (*Accipiter cooperii*)
7. Southern California rufous-crowned sparrow (*Aimophila ruficeps canescens*)
8. Golden eagle (*Aquila chrysaetos*)
9. Burrowing owl (*Athene cunicularia*)
10. Ferruginous hawk (*Buteo regalis*)
11. White-tailed kite (*Elanus leucurus*)
12. California horned lark (*Eremophila alpestris actia*)
13. Northwestern San Diego pocket mouse (*Chaetodipus fallax fallax*)
14. San Diego black-tailed jackrabbit (*Lepus californicus bennettii*)
15. Los Angeles pocket mouse (*Perognathus longimembris brevinasus*)

No adverse effects from the project are anticipated to occur to the above-mentioned MSHCP species.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

Alternative 3 would have the same impacts as identified for Alternative 2. Therefore, due to the marginal, disturbed nature of the existing habitat conditions within the BSA, the project would not have substantial effects on the four non-listed special-status species found on site. In addition, no adverse effects from the project are anticipated to occur to the identified and adequately conserved MSHCP species.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

Alternative 4 would have the same impacts as identified for Alternative 2. Although the new BSA area associated with Alternative 4 is located in the Elsinore Area Plan of the MSHCP, the BSA associated with Alternative 4 is not within MSCHP survey areas for Criteria Areas Species Survey Area (CASSA) or other MSHCP survey species area (e.g., burrowing owl). The BSA for Alternative 4 is within MSHCP Criteria Cell No. 4647, which focuses on conservation of riparian scrub and woodland/forest habitat. However, this habitat is not present within the BSA due to the highly developed conditions of the area. Therefore, due to the marginal, disturbed nature of the existing habitat conditions within the BSA, the project would not have substantial effects on the four non-listed special-status species found on site. In addition, no adverse effects from the project are anticipated to occur to the identified and adequately conserved MSHCP species.

CEQA DISCUSSION

Would the project:

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

Less Than Significant with Mitigation. The project site is within a previously disturbed semi-urban area. The project limits generally occur within the existing State and City rights-of-way.

Federal- and State-Listed Species

Least Bell's Vireo. Two pairs of Least Bell's Vireo (LBV) were found within the Biological Study Area (BSA) within the San Jacinto River during the spring 2009 focused surveys. The LBV were observed within MSHCP Criteria Cells 4646 and 4647. However, the LBV territory is not within, but adjacent to, the proposed construction limits, and no direct effects to the LBV or its habitat will occur as a result of the project. In addition, critical habitat for the LBV is not present within the BSA. The project will not result in permanent indirect effects to the LBV; therefore, impacts would be less than significant. With implementation of **Minimization Measures AN-3** through **AN-6**, and **AN-8**, presented below in Section 2.20.4, and **Minimization Measure TE-1**, presented in Section 2.21.4, potential temporary indirect effects to the LBV and its habitat would be minimized and impacts would remain less than significant.

Southwestern Willow Flycatcher. Although the southwestern willow flycatcher (SWWF) was not observed during the 2009 focused survey, this species may utilize riparian habitat occupied by the LBV within the San Jacinto River. Similar to the discussion above regarding the LBV, no direct effects to the SWWF or its habitat will occur as a result of the project. The project will not result in permanent indirect effects to the SWWF. Impacts would be less than significant. With implementation of **Minimization Measures AN-1** through **AN-6**, and **AN-8**, presented below in Section 2.20.4, and **Minimization Measure TE-1**, presented in Section 2.21.4, potential temporary indirect effects to the SWWF and its habitat would be minimized and impacts would remain less than significant.

Stephens' Kangaroo Rat. The BSA contains moderately suitable habitat for Stephens' kangaroo rat (SKR) in the form of disturbed/ruderal and disturbed Riversidean Sage Scrub. This species is covered under the MSHCP, which requires no focused survey. Under Section 7 of Federal Endangered Species Act (FESA), the project poses a "may affect, likely to adversely affect" through removal of potentially occupied habitat. However, the Habitat Conservation Plan for the SKR in Western Riverside County (Riverside County Habitat Conservation Agency, February 1995) provides full mitigation for impacts under California Environmental Quality Act (CEQA), National Environmental Policy Act (NEPA), California Endangered Species Act (CESA), and FESA. While impacts are not considered significant, with implementation of **Mitigation Measure AN-1** and **Minimization Measures AN-2** through **AN-6**, and **AN-8**, presented below in Section 2.20.4, and **Minimization Measure TE-2**, presented in Section 2.21.4, potential temporary impacts during project construction to SKR would remain less than significant.

Non-Listed Species

Portions of the project BSA provide potentially suitable nesting habitat for several bird species with the presence of the following species noted during biological surveys: Cooper's hawk and California horned lark. The bird nesting season is typically defined as between February 15 and September 1. To ensure compliance with the Migratory Bird Treaty Act, implementation of **Minimization Measures AN-7**, presented below in Section 2.20.4, potential temporary impacts to migratory birds during project construction would remain less than significant.

Burrowing Owl. The project site was also found to contain potentially suitable habitat for the burrowing owl within the BSA. No burrowing owl sign was detected within the BSA during the spring 2009 focused survey or the 2014 pedestrian survey of the area included within the BSA; however, the species is highly mobile and has the potential to move onto the project site prior to construction. With implementation of **Mitigation Measure AN-1**, potential temporary impacts during project construction to burrowing owls would be reduced to below a significant level. No mitigation is required if impacts are avoided; however, if burrowing owls are discovered during the pre-construction surveys required under **Mitigation Measure AN-1**, presented below in Section 2.20.4, project-specific mitigation would be required. Mitigation measures would be developed and authorized through consultation with CDFW and USFWS, and would comply with the standards specified in MSHCP, Table 9.2, and Appendix E, Summary of MSHCP Species Survey Requirements.[1]

2.20.4 Avoidance, Minimization, and/or Mitigation Measures

The following measures are required to avoid, minimize, and/or mitigate potential project impacts to special-status animal species:

Mitigation Measure

AN-1 A burrowing owl pre-construction survey within 30 days prior to ground disturbance is mandatory in suitable habitat areas. If burrowing owls are found to be present in the Biological Study Area (BSA) during subsequent pre-construction surveys, then the project-specific mitigation would be developed and authorized through consultation with the Western Riverside County Regional

[1] Dudek and Associates, Inc. 2003. *Multiple Species Habitat Conservation Plan*. June 17.

Conservation Authority, the California Department of Fish and Wildlife (CDFW), and the United States Fish and Wildlife Service (USFWS), as outlined in the Multiple Species Habitat Conservation Plan (MSHCP), Table 9.2, and Appendix E of this document, Summary of MSHCP Species Survey Requirements.

Minimization Measures

AN-2 Prior to clearing or construction, highly visible barriers (such as orange construction fencing) will be installed disturbed/ruderal and Riversidean sage scrub plant communities adjacent to the project footprint to be flagged as Environmentally Sensitive Areas (ESAs) to be preserved. No grading or fill activity of any type will be permitted within these ESAs. In addition, heavy equipment, including motor vehicles, will not be allowed to operate within the ESAs. All construction equipment will be operated in a manner so as to prevent accidental damage to nearby preserved areas. No structure of any kind, or incidental storage of equipment or supplies, shall be allowed within these protected zones. Silt fence barriers will be installed at the ESA boundary to prevent accidental deposition of fill material in areas where vegetation is immediately adjacent to planned grading activities.

AN-3 All equipment maintenance, staging, and dispensing of fuel, oil, or any other such activities will occur in developed or designated non-sensitive upland habitat areas. The designated upland areas will be located in such a manner as to prevent the runoff from any spills from entering waters of the United States or waters of the State.

AN-4 Per the project's *Storm Water Data Report* (July 2017), best management practices (BMPs) will be implemented to avoid or reduce potential storm water impacts to affected downstream waters. Avoidance and minimization efforts will be implemented through the use of pollution prevention BMPs, treatment BMPs, and construction site BMPs.

AN-5 A qualified biologist shall monitor construction for the duration of the project to ensure that vegetation removal, BMPs, ESAs, and all avoidance and minimization measures are properly constructed and followed.

AN-6 The project will comply with MSHCP Section 6.1.4. Guidelines Pertaining to Urban/Wildlands Interface, which addresses effects associated with locating development in proximity to an MSHCP Conservation area. In addition, the project will comply with MSHCP, Volume 1, Appendix C, Standard Best Management Practices, and MSHCP, Section 7.5.3, Construction Guidelines.

AN-7 Vegetation clearing and preliminary ground disturbance work will be completed outside of bird breeding season (typically set as February 15 through September 1). In the event that initial groundwork cannot be conducted outside the bird breeding season, focused surveys will be conducted prior to ground-disturbing activities. Should nesting birds be found, an exclusionary buffer will be established by the biologist. The buffer may be up to 500 feet in diameter depending on the species of nesting bird found. This buffer will be clearly marked in the field by construction personnel under guidance of the biologist, and construction or clearing will not be conducted within this zone until the biologist determines that the young have fledged or the nest is no longer active.

In order to avoid impacts to nesting birds protected by the Migratory Bird Treaty Act (MBTA), and for compliance with the MSHCP Incidental Take Permit Condition 5, any vegetation removal or tree (native or exotic) trimming activities will occur outside of the nesting bird season (typically set as February 15 through September 1). In the event vegetation clearing is necessary during the nesting season, a qualified biologist will conduct a pre-construction survey within three days of ground disturbing activities to identify the locations of nests. Should nesting birds be found, the biologist will establish an exclusionary buffer that shall be clearly marked in the field by construction personnel under guidance of the biologist. Construction or clearing shall not be conducted within this zone until the biologist determines that the young have fledged or the nest is no longer active.

Nesting bird habitat within the BSA will be resurveyed during the general bird breeding season if there is a lapse in construction activities longer than seven days.

AN-8 Any new lighting fixtures that would be installed within 300 feet of the San Jacinto River shall be wildlife-friendly and shall be directed away from biologically sensitive areas, the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP) Conservation Areas, and vegetated drainages.

AN-9 Prior to construction, an agency -approved bat biologist shall conduct a bat assessment survey to determine the presence or absence of bat species that may occur within the project limits. Should the presence of bat species be determined during this assessment, the following measures shall be implemented to address potential impacts to bats.

- Project-related construction activities shall occur outside of the bat maternity roosting season (April 1–August 31), if feasible. Should such activities occur during the maternity roosting season (April 1–August 31), the following measures shall be implemented to minimize potential impacts to day-roosting bats (including maternity colonies) from project construction.
- Nighttime exit counts and acoustic surveys shall be performed by an agency-approved bat biologist at all structures that may be subject to project-related impacts. These surveys shall be performed during the recognized bat maternity season (April 1–August 31, but preferably in June or July), and as far in advance of construction as possible in order to provide adequate time for mitigation planning.
- Construction activities at structures housing maternity colonies shall be coordinated with an agency-approved bat biologist and the CDFW.
- If direct impacts to bat roosting habitat are anticipated, humane evictions and exclusions of roosting bats should be performed under the supervision of an agency-approved bat biologist after August 31 in the fall (September or October) prior to any work activities that would result in direct impacts or direct mortality to roosting bats. This action will be performed in coordination with the CDFW. To avoid potential mortality of flightless juvenile bats, evictions and exclusions of bats cannot be performed during the maternity season (April 1–August 31). Winter months are also inappropriate for bat eviction because not all individuals in a roost will emerge on any given night. In addition, long-distance movements to other roost sites are more difficult

during the winter when prey availability is scarce, resulting in high mortality rates of evicted bats.

- Alternate bat-roosting habitat structures should be installed on the structure prior to the eviction/exclusion of bats from that structure. The design, numbers, and locations of these roost structures should be determined in consultation with an agency-approved bat biologist.
- If permanent, direct impacts to bat roosting habitat are anticipated and a humane eviction/exclusion is performed, alternate permanent roosting habitat shall be provided to ensure no net loss of bat roosting habitat. This action shall be coordinated with the CDFW, and locations of these roost structures should be determined in consultation with an agency-approved bat biologist to ensure that the installed habitat will provide adequate mitigation for impacts.
- The loss of a night roost can negatively affect the use of a foraging area, and consequently may result in reduced fecundity in species that are already slow to reproduce. If night roosting is confirmed at any of the structures within the proposed project area, the following measure to minimize potential impacts to night-roosting and foraging bats shall be implemented:
- At structures where night roosting is suspected or confirmed, work shall be limited to the daylight hours to the greatest extent feasible to avoid potential disruption of foraging. If night work cannot be avoided, night lighting shall be focused only on the area of direct work, airspace access to and from the roost features of the structure shall not be obstructed, and light spillover into the adjacent foraging areas shall be minimized to greatest extent feasible.

This page intentionally left blank

2.21 Threatened and Endangered Species

2.21.1 Regulatory Setting

The primary federal law protecting threatened and endangered species is the Federal Endangered Species Act (FESA): 16 United States Code (USC) Section 1531, et seq. See also 50 Code of Federal Regulations (CFR) Part 402. This act and subsequent amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of this act, federal agencies, such as the Federal Highway Administration (FHWA), are required to consult with the U.S. Fish and Wildlife Service (USFWS) and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries Service) to ensure that they are not undertaking, funding, permitting or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species. The outcome of consultation under Section 7 is a Biological Opinion or an Incidental Take statement. Section 3 of FESA defines take as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct."

California has enacted a similar law at the State level, the California Endangered Species Act (CESA), California Fish and Game Code, Section 2050, et seq. CESA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate planning to offset project-caused losses of listed species populations and their essential habitats. The California Department of Fish and Wildlife (CDFW) is the agency responsible for implementing CESA. Section 2081 of the Fish and Game Code prohibits "take" of any species determined to be an endangered species or a threatened species. Take is defined in Section 86 of the Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA allows for take incidental to otherwise lawful development projects; for these actions an incidental take permit is issued by the CDFW. For species listed under both FESA and CESA requiring a Biological Opinion under Section 7 of the FESA, CDFW may also authorize impacts to CESA species by issuing a Consistency Determination under Section 2080.1 of the California Fish and Game Code.

Another federal law, the Magnuson-Stevens Fishery Conservation and Management Act of 1976, was established to conserve and manage fishery resources found off the coast, as well as anadromous species and Continental Shelf fishery resources of the United States, by exercising (1) sovereign rights for the purposes of exploring, exploiting, conserving, and managing all fish within the exclusive economic zone established by Presidential Proclamation 5030, dated March 10, 1983, and (2) exclusive fishery management authority beyond the exclusive economic zone over such anadromous species, Continental Shelf fishery resources, and fishery resources in special areas.

2.21.2 Affected Environment

This section is based on the following documents prepared for the project:

- *Natural Environment Study* (NES) (August 2017)
- *Update to the Natural Environment Study* (NES Memorandum) (January 2015)

In the summer of 2014, the Project Development Team (PDT) and the City of Lake Elsinore introduced Alternative 4. The NES Memorandum was prepared to address Alternative 4 and to determine whether the recommendations contained in the NES prepared in 2010, which address Alternatives 2 and 3, are sufficient to address Alternative 4.

Prior to on-site biological surveys, a literature review and records search were conducted for both the 2017 NES and the 2015 NES Memorandum to identify the existence or potential occurrence of sensitive or special-status biological resources (e.g., animal species) in or within the vicinity of the Biological Study Area (BSA). The results of the literature review prepared for the 2017 NES indicated the potential occurrence of five Federal/State listed species in the BSA based on potentially suitable habitat present within the BSA. These include Quino checkerspot butterfly (*Euphydryas editha quino*), southwestern willow flycatcher (*Empidonax traillii extimus*), coastal California gnatcatcher (*Polioptila californica californica*), least Bell’s vireo (*Vireo bellii pusillus*), and Stephens’ kangaroo rat (*Dipodomys stephensi*). The literature review conducted for the 2015 NES Memorandum did not find any new special-status species outside those evaluated as part of the 2017 NES. Resource Agency coordination also included receipt of a Species List from the United States Fish and Wildlife Service (USFWS, June 20, 2017). A copy of the Species List is provided in Chapter 3.

The project is located outside of the National Marine Fisheries Service (NMFS) jurisdictional boundary/quadrangle, and the BSA is outside the range of species under NMFS jurisdiction listed on the USFWS Information Planning and Conservation System (IPaC) species list. Therefore, the NMFS species list was not requested from NMFS.

Focused surveys were conducted in 2009 for the southwestern willow flycatcher (SWWF) and least Bell’s vireo (LBV). The LBV was determined to be present within the BSA. The SWWF was found to be absent from the BSA.

The BSA provides low quality habitat for the Quino checkerspot butterfly and coastal California gnatcatcher. Both of these species are covered under the Western Riverside County Multiple Species Habitat Conservation Plan (MSHCP). Because these species are MSHCP covered species and habitat is considered to be of low value, further study of these species in not required and these species are not discussed further here.

The BSA provides moderate quality habitat for Stephens’ kangaroo rat (SKR) within the disturbed Riversidean sage scrub (RSS) plant community.

Several depressions within the BSA were evaluated as potential vernal pools. A habitat assessment for fairy shrimp was conducted within the BSA by USFWS-permitted (USFWS Permit TE-777965-10) fairy shrimp biologist Stan Spencer with assistance from Denise Woodard on April 19, 2010. The results of the 2010 fairy shrimp habitat assessment found that the depressions within the BSA do not have the vegetative, hydrologic, or soil characteristics associated with vernal pools and would not support federally listed fairy shrimp including Riverside fairy shrimp (*Streptocephalus woottoni*), Santa Rosa Plateau fairy shrimp (*Linderiella santarosae*), or vernal pool fairy shrimp (*Branchinecta lynchi*). Based on new information, related to potential impacts to threatened/endangered fairy shrimp species, the USFWS advised that there was a new recent record of San Diego fairy shrimp (*Branchinecta sandiegonensis*) in Riverside County, and that the depressions on site may support this species. However, during March 2017 consultation with the RCA and the Wildlife Agencies, the USFWS raised concerns, based on new information, related to potential impacts to threatened/endangered fairy shrimp species. The USFWS stated that there was a new recent record of San Diego fairy shrimp (*Branchinecta sandiegonensis*) in Riverside County, and that the depressions on site may support this species.

No other Federal or State listed threatened/endangered species are present in the BSA for the project.

Western Riverside MSHCP Consistency review, which includes a review of the Determination of Biologically Equivalent or Superior Preservation (DBESP) report and the Natural Environment Study (NES) by the USFWS and CDFW to determine consistency with the MSHCP. USFWS Section 7 Consultation/streamlined biological opinion is not necessary due to the implementation of avoidance and minimization measures.

2.21.3 Environmental Consequences

2.21.3.1 Temporary Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

Under the No Build Alternative, no construction would occur, and there would be no impacts to Federal or State threatened or endangered species.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

Alternative 2 would require ground disturbance and modification to the existing freeway and local streets. These construction activities could result in impacts to Federal or State threatened or endangered species. The potential impacts to these species would be permanent impacts and are addressed below. Any analysis of temporary impacts is not applicable.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

Alternative 3 would require ground disturbance and modification to the existing freeway and local streets. These construction activities could result in impacts to Federal or State threatened or endangered species. The potential impacts to these species would be permanent impacts and are addressed below. Any analysis of temporary impacts is not applicable.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

Alternative 4 would require ground disturbance and modification to the existing freeway and local streets. These construction activities could result in impacts to Federal or State threatened or endangered species. The potential impacts to these species would be permanent impacts and are addressed below. Any analysis of temporary impacts is not applicable.

2.21.3.2 Permanent Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

Under the No Build Alternative, no improvements would occur; therefore, no permanent impacts to Federal or State threatened or endangered species would occur.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

Two pairs of LBV were found within the BSA within the San Jacinto River during the spring 2009 focused surveys. The LBV were observed within MSHCP Criteria Cells Nos. 4646 and 4647. The LBV territories are not within, but adjacent to, the proposed construction limits, and no direct effects to the LBV or its habitat would occur as a result of the project. In addition, critical habitat for the LBV is not present within the BSA. With implementation of **Measures AN-3** through **AN-6**, and **AN-8** (in Section 2.20.4, above), and **Measure TE-1**, provided below, potential permanent indirect effects to the LBV and its habitat would not be adverse under this alternative.

The spring 2009 focused survey determined the SWWF, an MSHCP covered species, to be absent from the BSA. In addition, critical habitat for the SWWF is not present within the BSA. Although the SWWF was not observed during the 2009 focused survey, this species may utilize riparian habitat occupied by the least Bell's vireo within the San Jacinto River. With implementation of **Measures AN-3** through **AN-6**, and **AN-8** (in Section 2.20.4, above), and **Measure TE-1**, provided below, potential permanent indirect effects to the SWWF and its habitat would not be adverse under this alternative.

The BSA contains moderately suitable habitat for the SKR in the form of disturbed/ruderal and disturbed RSS. This species is covered under the MSHCP, which requires no focused survey. Impacts to the SKR would result from the loss of 15.39 acres of disturbed RSS for Alternative 2.

Under Section 7 of FESA, the project poses a "may affect, likely to adversely affect" through removal of potentially occupied habitat. However, the Habitat Conservation Plan for the SKR in Western Riverside County (Riverside County Habitat Conservation Agency, February 1995) provides full mitigation for impacts under California Environmental Quality Act (CEQA), National Environmental Policy Act (NEPA), CESA, and FESA. Therefore, with implementation of **Measures AN-2** through **AN-6**, and **AN-8** (in Section 2.20.4, above), and **Measure TE-2**, provided below, project impacts to SKR would be reduced.

Based a new recent record of San Diego fairy shrimp (*Branchinecta sandiegonensis*) in Riverside County, depressions on site may support this species. Implementation of **Measure TE-3** would ensure that impacts to federally listed fairy shrimp species would not be adverse.

Alternative 3: Northbound Hook Ramps to Grape Street and Southbound Hook Ramps to Casino Drive

The impacts associated with threatened or endangered species within the BSA would be the same for Alternative 3 as those identified for Alternative 2, with the exception of impacts related to the loss of suitable SKR habitat (disturbed RSS). This species is covered under the MSHCP, which requires no focused survey. Impacts to the SKR would result from the loss of 14.99 acres of disturbed RSS for Alternative 3 and would be slightly higher than the area affected for Alternative 2.

With implementation of **Measures AN-3** through **AN-6**, and **AN-8** (in Section 2.20.4, above), and **Measure TE-1**, provided below, potential indirect effects to the LBV and SWWF and their habitat would not be adverse under this alternative. With implementation of **Measures AN-2** through **AN-6**, and **AN-8** (in Section 2.20.4, above), and **Measure TE-2**, provided below, potential impacts to SKR would be reduced under this alternative. Implementation of **Measure TE-3** would ensure that impacts to federally listed fairy shrimp species would not be adverse.

Alternative 4: Roundabout Alternative

The impacts associated with threatened or endangered species within the BSA would be the same for Alternative 4 as those identified for Alternative 2.

The BSA associated with Alternative 4 is located in the Elsinore Area Plan of the MSHCP, which does not contain MSHCP riparian/riverine/vernal pool resources, and is not within MSHCP survey areas for Criteria Areas Species Survey Area (CASSA) and Narrow Endemic Plant Species Survey Area (NEPSSA) plants or other MSHCP survey species areas (e.g., burrowing owl). However, the BSA is within MSHCP Criteria Cell No. 4647; specifically, the Assessor's Parcel Numbers (APNs) at the intersection of Railroad Canyon Road and Grape Street-Summerhill Drive. Conservation goals within Criteria Cell No. 4647 focuses on riparian scrub, woodland and forest habitat along the San Jacinto River, adjacent coastal sage scrub habitat, and additional chaparral and coastal sage scrub habitat within the cell. As detailed previously, the new BSA is developed and thus does not contain habitats subject to conservation within Criteria Cell No. 4647.

With implementation of **Measures AN-3** through **AN-6**, and **AN-8** (in Section 2.20.4, above), and **Measure TE-1**, provided below, potential indirect effects to the LBV and the SWWF and their habitat would not be adverse under this alternative. With implementation of **Measures AN-2** through **AN-6**, and **AN-8** (in Section 2.20.4, above), and **Measure TE-2**, provided below, potential impacts during project construction to SKR would be reduced under this alternative. Implementation of **Measure TE-3** would ensure that impacts to federally listed fairy shrimp species would not be adverse.

With implementation of **Minimization Measures TE-1** through **TE-3**, listed below in Section 2.21.4, there would be “no effect” to the federally endangered least Bell’s Vireo (*Vireo bellii pusillus*), the federally endangered southwestern willow flycatcher (*Empidonax traillii extimus*), and the federally endangered San Diego Fairy Shrimp (*Branchinecta sandiegonensis*).While the project poses a “may affect, likely to adversely affect” through removal of potentially occupied habitat for the SKR, the Habitat Conservation Plan for the SKR in Western Riverside County (Riverside County Habitat Conservation Agency, February 1995) provides full mitigation for impacts under FESA. There is no suitable habitat present for the other 12 species listed on the USFWS Species list; therefore, the project would have “no effect” on the following species:

<u>Plants</u>

- California Orcutt Grass (*Orcuttia californica*), federally endangered
- Munz’s Onion (*Allium munzii*), federally endangered
- San Diego Ambrosia (*Ambrosia pumila*), federally endangered
- San Jacinto Valley Crownscale (*Atriplex coronate var. notatior*); federally endangered
- Spreading Navarretia (*Navarretia fossalis*), federally threatened
- Thread-leaved Brodiaea (*Brodiaea filifolia*), federally threatened

<u>Mammals</u>

- San Bernardino Merriam’s Kangaroo Rat (*Dipodomys merriami parvus*), federally threatened

<u>Birds</u>

- California Coastal Gnatcatcher (*Polioptila californica californica*), federally threatened
- Western Snowy Plover (*Charadrius alexandrines nivosus*), federally threatened

<u>Insects</u>

- Quino Checkerspot Butterfly (*Euphydryas editha quino [=E. e. wrighti]*), federally endangered

<u>Crustaceans</u>

- Riverside Fairy Shrimp (*Streptocephalus woottoni*), federally endangered
- Vernal Pool Fairy Shrimp (*Branchinecta lynchi*), federally threatened

Western Riverside MSHCP Consistency review, which includes a review of the Determination of Biologically Equivalent or Superior Preservation (DBESP) report and the Natural Environment Study (NES) by the USFWS and CDFW to determine consistency with the MSHCP was completed for this project. The CDFW and USFWS issued an MSHCP Consistency Determination noting that the project is in compliance with the MSHCP on August 14, 2017.

CEQA DISCUSSION

Would the project:

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

Please refer to Section 2.20.3 above for a discussion of the project's impact on special-status, sensitive, or candidate species.

2.21.4 Avoidance, Minimization, and/or Mitigation Measures

The following measures are required to avoid, minimize, and/or mitigate potential project impacts to Federal or State threatened or endangered species:

Minimization Measures

TE-1 Prior to clearing or construction during the least Bell's vireo nesting season (March 15 to September 1), highly visible barriers (such as orange construction fencing) will be installed providing a minimum 500- foot buffer around riparian and riverine communities adjacent to the project footprint to be flagged as Environmentally Sensitive Areas (ESAs) to be preserved. The ESAs will serve as an exclusionary buffer delineating areas where no work shall be performed during the least Bell's vireo nesting season. More specifically, no grading or fill activity of any type will be permitted within these ESAs. In addition, heavy equipment, including motor vehicles, will not be allowed to operate within the ESAs. All construction equipment will be operated in a manner so as to prevent accidental damage to nearby preserved areas. No structure of any kind, or incidental storage of equipment or supplies, shall be allowed within these protected zones. Silt fence barriers will be installed at the ESA boundary to prevent accidental deposition of fill material in areas where vegetation is adjacent to planned grading activities. These special provisions shall be incorporated into the project's specifications and construction documents.

TE-2 The project will comply with the Habitat Conservation Plan for the Stephens' Kangaroo Rat in Western Riverside County (Riverside County Habitat Conservation Agency, February 1995) and fulfill its compensatory mitigation requirements under this plan.

TE-3 To address potential impacts to listed fairy shrimp species potentially within depressional areas that would be affected by project implementation., the Final Environmental Document shall include one of the following program and implementation actions to be completed after approval of the Final Environmental Document but prior to any ground disturbance activities within depressional areas that may be potentially affected by project implementation. Only one of the two options identified below is required to address potential impacts to listed fairy shrimp species potentially within depressional areas within the project limits.

Option A:

1) Conduct one single dry-season (i.e., no water present) fairy shrimp sampling within the depressional areas that would be affected by the project to

determine if fairy shrimp cysts are present. The sampling shall require special authorization from the USFWS. If cysts are determined to be present, assume presence of listed fairy shrimp species within depressional areas that would be affected by project implementation without hatching the cysts.

2) Remove the top two inches of soil from these areas and translocate the soil to an area of fairy shrimp habitat creation to be determined in consultation with the Western Riverside County Regional Conservation Authority (RCA) and approved by the USFWS and CDFW. The long-term management of the fairy shrimp habitat where soils will be translocated if listed fairy shrimp are found shall be the responsibility of the City. If the receptor site is not suitable due to insufficient area for placement outside of existing seasonal pool and smooth tarplant mitigation areas, the RCA would be willing to accept soils and long term management of the same if an appropriate RCA owned and managed receptor site can be identified. In order to minimize potential damage to fairy shrimp cysts, the soil must be dry when it is removed.

3) Upon translocation of the soils as approved by the RCA and Wildlife Agencies, no additional measures for fairy shrimp will be required, and impacts to the depressional areas affected by project implementation may proceed.

Option B:

1) Conduct one single dry-season (i.e., no water present) fairy shrimp survey/sampling within the depressional areas that would be affected by the project. The survey/sampling shall require special authorization from the USFWS.

2) If fairy shrimp cysts are found during the survey/sampling, an attempt to hatch them shall be made.

3) If hatching is unsuccessful, or if hatching is successful and vernal pool fairy shrimp (*Branchinecta lynchi*) or San Diego fairy shrimp (*Branchinecta sandiegonensis*) (i.e., listed fairy shrimp) are identified among the hatched fairy shrimp, the soil from the affected depressions shall be translocated to an area of existing fairy shrimp habitat to be determined in consultation with the RCA and approved by the USFWS and CDFW. The long-term management of the fairy shrimp habitat where soils will be translocated if listed fairy shrimp are found shall be the responsibility of the City. If the receptor site is not suitable due to insufficient area for placement outside of existing seasonal pool and smooth tarplant mitigation areas, the RCA would be willing to accept soils and long term management of the same if an appropriate RCA owned and managed receptor site can be identified. In order to minimize potential damage to fairy shrimp cysts, the soil must be dry when it is removed.

4) If hatching is successful and hatched fairy shrimp are all determined to be versatile fairy shrimp (*Branchinecta lindahli*, a common species), no additional measures for fairy shrimp shall be required, and impacts to the depressional areas affected by project implementation may proceed.

This page intentionally left blank

2.22 Invasive Species

2.22.1 Regulatory Setting

On February 3, 1999, President Clinton signed Executive Order (EO) 13112 requiring federal agencies to combat the introduction or spread of invasive species in the United States (U.S.). The order defines invasive species as "any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health." Federal Highway Administration guidance issued August 10, 1999, directs the use of the State's invasive species list currently maintained by the California Invasive Species Council to define the invasive species that must be considered as part of the NEPA analysis for a project.

2.22.2 Affected Environment

This section is based on the following documents prepared for the project:

- *Natural Environment Study* (NES) (August 2017)
- *NES Update Memorandum* (NES Memorandum) (January 2015)

Table 2.22.A lists invasive plant species observed in the BSA during the 2009 site visit conducted for the 2017 NES originally prepared in 2010. There are exotic plant species within the nonnative plant communities throughout the BSA, in areas that have been disturbed by human uses. Exotic species are typically more numerous adjacent to roads and developed areas and frequently border ornamental landscapes.

Table 2.22.A: Invasive Plant Species Observed

Scientific Name	Common Name	Cal-IPC Rating
Bromus madritensis ssp. *rubens*	red brome	High[1]
Tamarix ramosissima	Mediterranean tamarisk	High
Ailanthus altissima	tree of heaven	Moderate[2]
Avena barbata	slender wild oat	Moderate
Bromus diandrus	ripgut brome	Moderate
Hirschfeldia incana	shortpod mustard	Moderate
Centaurea melitensis	tocalote	Moderate
Cynodon dactylon	Bermuda grass	Moderate
Hordeum murinum	foxtail barley	Moderate
Nicotiana glauca	tree tobacco	Moderate
Schinus sp.	pepper tree	Limited[3]
Salsola tragus	Russian thistle	Limited
Ricinus communis	castor bean	Limited
Erodium cicutarium	redstem stork's bill	Limited
Marrubium vulgare	horehound	Limited
Polypogon monspeliensis	rabbitfoot grass	Limited

Source: *Natural Environment Study* (August 2017).
Notes: Plants with a rating of high have severe ecological impacts.
Plants with a rating of moderate have a substantial and apparent, but not severe, ecological impacts.
Plants with a limited rating are invasive but their ecological impacts are minor on a statewide level.
Cal-IPC = California Invasive Plant Council

The California Invasive Plant Council (Cal-IPC) Invasive Plant Inventory is based on information submitted by members, land managers, botanists, and researchers throughout the State as well as published sources. The inventory highlights nonnative plants that are serious problems in wildlands (natural areas that support native ecosystems, including national, State, and local parks; ecological reserves; wildlife areas; National Forests; and Bureau of Land Management lands; etc.). The inventory categorizes plants as High, Moderate, or Limited based on the species' negative ecological impact in California. Plants categorized as High have severe ecological impacts. Plants categorized as Moderate have substantial and apparent, but not severe, ecological impacts. Plants categorized as Limited are invasive, but their ecological impacts are minor on a statewide level.

2.22.3 Environmental Consequences

2.22.3.1 Temporary Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

Under the No Build Alternative, there would be no construction and no temporary project-related changes to the extent of invasive species that occur within the BSA.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

Impacts related to invasive species for Alternative 2 are considered permanent impacts because the introduction of invasive species into previously undisturbed areas would result in permanent impacts to the habitat. Therefore, impacts related to invasive species as a result of the implementation of Alternative 2 are described below under permanent impacts.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

Impacts related to invasive species are considered permanent impacts because the introduction of invasive species into previously undisturbed areas would result in permanent impacts to the habitat. Therefore, impacts related to invasive species as a result of the project are described below under permanent impacts.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

Impacts related to invasive species are considered permanent impacts because the introduction of invasive species into previously undisturbed areas would result in permanent impacts to the habitat. Therefore, impacts related to invasive species as a result of the project are described below under permanent impacts.

2.22.3.2 Permanent Impacts

ALTERNATIVE 1: NO BUILD ALTERNATIVE

The No Build Alternative would not result in the construction of any improvements to Interstate 15 (I-15) and, therefore, would not result in any adverse permanent impacts related to invasive species.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

The construction of Alternative 2 has the potential to spread invasive species by the entering and exiting of construction equipment contaminated by invasive species, the inclusion of invasive species in seed mixtures and mulch, disturbances to soil surfaces, and improper removal and disposal of invasive species that results in the seed being spread along the highway. In compliance with EO 13112, a weed abatement program will be developed to minimize the importation of nonnative plant material during and after construction of the project.

With implementation of **Measure IS-1**, provided below, potential project-related permanent impacts related to invasive species would not be adverse.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

Similar to Alternative 2, implementation of Alternative 3 has the potential to spread invasive species by the entering and exiting of construction equipment contaminated by invasive species, the inclusion of invasive species in seed mixtures and mulch, disturbances to soil surfaces, and improper removal and disposal of invasive species that results in the seed being spread along the highway. With implementation of **Measure IS-1**, provided below, potential project-related permanent impacts related to invasive species would not be adverse.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

Similar to Alternative 2, implementation of Alternative 4 has the potential to spread invasive species by the entering and exiting of construction equipment contaminated by invasive species, the inclusion of invasive species in seed mixtures and mulch, disturbances to soil surfaces, and improper removal and disposal of invasive species that results in the seed being spread along the highway. With implementation of **Measure IS-1**, provided below, potential project-related permanent impacts related to invasive species would not be adverse.

2.22.4 Avoidance, Minimization, and/or Mitigation Measures

The following measures are required to avoid, minimize, or mitigate potential project impacts related to invasive species:

Minimization Measure

IS-1 In compliance with Executive Order 13112 and Table 6-2 of the Multiple Species Habitat Conservation Plan (MSHCP), the landscaping and erosion control included in the project will not use species listed as invasive. In areas of particular sensitivity, extra precautions will be taken if invasive species are found in or next to the construction areas. These include the inspection and cleaning of construction equipment and eradication strategies to be implemented should an invasion occur. A weed abatement program shall be developed to minimize the importation of nonnative plant material during and after construction. At a minimum, this program shall include the following measures.

- During construction, the construction contractor shall inspect and clean construction equipment at the beginning and end of each day and prior to transporting equipment from one project location to another.
- During construction, soil and vegetation disturbance will be minimized to the greatest extent feasible.
- During construction, the construction contractor shall ensure that all active portions of the construction site are watered a minimum of twice daily or more often when needed due to dry or windy conditions to prevent excessive amounts of dust.
- During construction, the construction contractor shall ensure that all material stockpiled is sufficiently watered or covered to prevent excessive amounts of dust.
- During construction, soil/gravel/rock will be obtained from weed-free sources.

- Only certified weed-free straw, mulch, and/or fiber rolls will be used for erosion.
- The project has the potential to spread invasive species by the entering and exiting of construction equipment contaminated by invasive species, the inclusion of invasive species in seed mixtures and mulch, and by the improper removal and disposal of invasive species so that seed is spread along the highway. The following measures will be implemented to mitigate the potential of invasive species from spreading from or into the project area:
    - Bare soil will be landscaped with the California Department of Transportation (Caltrans) recommended seed mix from locally adapted species, where feasible, to preclude the invasion of noxious weeds. The use of site-specific materials, which are adapted to local conditions, increases the likelihood that revegetation will be successful and maintain the genetic integrity of the local ecosystem. Arrangements shall be made well in advance of planting (9 months, if possible) to ensure that plant materials are located and available for the scheduled planting time. Sufficient time should be allocated for a professional seed company to visit the project site during the appropriate season and collect the native plant seed. If local propagules are not available or cannot be collected in sufficient quantities, materials collected or grown from other sources within Southern California shall be substituted. For widespread native herbaceous species that are more likely to be genetically homogeneous, site specificity is a less important consideration and seed from commercial sources may be used.
    - Seed purity shall be certified by planting seed labeled under the California Food and Agricultural Code or that has been tested within a year by a seed laboratory certified by the Association of Official Seed Analysts or by a seed technologist certified by the Society of Commercial Seed Technologists.
    - Construction equipment will be cleaned of mud or other debris that may contain invasive plants and/or seeds and inspected to reduce the potential of spreading noxious weeds (before mobilizing to arrive at site and before leaving site).
    - Trucks with loads carrying vegetation shall be covered and vegetative materials removed from the site shall be disposed of in accordance with all applicable laws and regulations.
    - After construction, all revegetated areas will avoid the use of species listed on California Invasive Plant Council's California Invasive Plant Inventory that have a high or moderate rating.
    - Erosion control and revegetation sites will be monitored for 2 to 3 years after construction to detect and control the introduction/invasion of nonnative species.
    - Eradication procedures (e.g., spraying and/or hand weeding) will be outlined should an infestation occur; the use of herbicides will be prohibited within and adjacent to native vegetation, except as specifically authorized by the Caltrans District 8 Biologist.

2.23 Cumulative Impacts

2.23.1 Regulatory Setting

Cumulative impacts are those that result from past, present, and reasonably foreseeable future actions, combined with the potential impacts of this project. A cumulative effect assessment looks at the collective impacts posed by individual land use plans and projects. Cumulative impacts can result from individually minor, but collectively substantial impacts taking place over a period of time.

Cumulative impacts to resources in the project area may result from residential, commercial, industrial, and highway development, as well as from agricultural development and the conversion to more intensive types of agricultural cultivation. These land use activities can degrade habitat and species diversity through consequences such as displacement and fragmentation of habitats and populations, alteration of hydrology, contamination, erosion, sedimentation, disruption of migration corridors, changes in water quality, and introduction or promotion of predators. They can also contribute to potential community impacts identified for the project, such as changes in community character, traffic patterns, housing availability, and employment.

California Environmental Quality Act (CEQA) Guidelines, Section 15130, describes when a cumulative impact analysis is warranted and what elements are necessary for an adequate discussion of cumulative impacts. The definition of cumulative impacts, under CEQA, can be found in Section 15355 of the CEQA Guidelines. A definition of cumulative impacts, under the National Environmental Policy Act (NEPA), can be found in 40 CFR, Section 1508.7 of the Council on Environmental Quality (CEQ) Regulations.

2.23.2 Affected Environment

The project site is in Riverside County, California, on Interstate 15 (I-15) at the existing Railroad Canyon Road and planned I-15/Franklin Street interchanges. The project limits are along I-15 and extend from 1,000 feet (ft) northwest of Main Street to approximately 6,000 ft south of the existing I-15/Railroad Canyon Road interchange. The I-15/Railroad Canyon Road interchange provides local access to a portion of the City of Lake Elsinore as well as the surrounding Cities of Canyon Lake and Menifee in the northeast and the City of Wildomar to the south. Existing land uses around the existing I-15/Railroad Canyon Road interchange include numerous retail establishments, hotels, and office complexes as well as multifamily and single-family residences. Existing land use within the planned I-15/Franklin Street interchange primarily consists of vacant land and single-family residences.

2.23.3 Methodology

The cumulative impact analysis for the project was developed by following the eight-step process as set forth in the California Department of Transportation *Standard Environmental Reference* (SER) *Guidance for Preparers of Cumulative Impact Analysis* (2005). The eight-step process is as follows:

- Identify project-specific resources to be analyzed;
- Define the resource study area for each resource;
- Describe the current health and historical context for each resource;
- Identify direct and indirect impacts of the proposed project that might contribute to a cumulative impact on identified resources;

- Identify other reasonably foreseeable actions that affect each resource;
- Assess potential cumulative impacts;
- Report results; and
- Assess the need for avoidance, minimization, and/or mitigation and /or recommendations for actions by other agencies to address the cumulative impact.

As specified in the California Department of Transportation (Caltrans)/Federal Highway Administration (FHWA) guidance, if the proposed project would not result in a direct or indirect impact to a resource, it would not contribute to a cumulative impact on that resource. This cumulative impact analysis includes resources that are substantially affected by the project and resources that are currently in poor or declining health, or at risk even if the project's impacts to that resource would not be substantial.

The reasonably foreseeable actions used in this cumulative analysis were based on information provided by the City of Lake Elsinore (City), which identified approved and pending developments in proximity to the project area.

Examples of reasonably foreseeable actions included future development for which a General Plan or Specific Plan has been adopted that designates future land uses; projects for which the applicable jurisdiction has received an application for site development; or infrastructure improvement projects approved or planned by local jurisdictions or other public agencies.

2.23.4 Resources Excluded from Cumulative Impacts Analysis

The project (Build Alternatives 2, 3, and 4) includes ramp improvements and reconfigurations to the existing I-15/Railroad Canyon Road interchange. All Build Alternatives also include the construction of a new freeway interchange north of the existing I-15/Franklin Street overcrossing. All interchange improvements and construction would occur in the City of Lake Elsinore.

Based on the nature of the project, the nature of the project area, and the technical studies prepared for this Initial Study/Environmental Assessment (IS/EA), the following resources would not be substantially affected by the project and are not at risk:

- **Land Use.** The interchange improvements, construction of a new interchange, local street improvements, and conversion of the impacted residential and commercial properties to transportation uses to accommodate Alternatives 2, 3, and 4 are consistent with local and regional goals to improve traffic operations and reduce congestion in the area.
- **Growth.** The Build Alternatives would improve existing and future traffic operations, reduce congestion, and accommodate existing and future planned growth. Build Alternatives 2, 3, and 4 would not have an adverse effect on growth in the surrounding area.
- **Utilities and Emergency Services**. Utilities and emergency services would only be affected during the construction period. The project would not result in permanent impacts to utilities or emergency services.
- **Traffic and Transportation/Pedestrian and Bicycle Facilities.** Alternatives 2, 3, and 4 would improve traffic operations and reduce congestion. Pedestrian access would be maintained and bicycle lanes would be provided consistent with the City's General Plan. Construction-related traffic impacts would be avoided or minimized through implementation of a comprehensive Transportation Management Plan (TMP).

- **Visual/Aesthetics.** The Build Alternatives would not substantially change the existing views of and from the existing I-15/Railroad Canyon Road interchange or the planned I-15/Franklin Street interchange.
- **Cultural Resources.** Although the record search conducted for the project indicated numerous previously recorded cultural resources in the study area, none would be affected by the project. Therefore, Alternatives 2, 3, and 4 would not affect known historic properties. While cultural resources in the study area outside the Area of Potential Effects (APE) may be directly or indirectly affected by other projects, the project would not directly or indirectly affect those resources.
- **Hydrology and Floodplain.** The Build Alternatives would make minor modifications to existing drainage and flood control channels. Temporary impacts would be avoided or minimized through implementation of erosion control best management practices (BMPs). Therefore, neither alternative would result in permanent impacts to drainages or floodplains.
- **Geology and Soils.** Alternatives 2, 3, and 4 would not result in substantial temporary impacts. Temporary impacts would be avoided or minimized through implementation of soil management BMPs. Neither alternative would result in permanent impacts to soils.
- **Air Quality.** None of the Build Alternatives would result in a violation of existing air quality standards. Temporary impacts would be minimized through implementation of dust control and equipment handling measures.
- **Plant Species.** No sensitive plant species would be temporarily or permanently affected by the Build Alternatives.

2.23.5 Resources Evaluated for Cumulative Impacts

The following resource areas have the potential to be adversely affected by the cumulative impacts of the project in combination with the potential impacts of the reasonably foreseeable actions described above:

- Community impacts
- Water quality and storm water runoff
- Paleontology
- Air Quality
- Wetlands and Other Waters
- Animal Species
- Threatened or Endangered Species

2.23.6 Environmental Consequences

The following discussion of potential cumulative impacts is presented by environmental resource area. No cumulative impact discussion is provided for the No Build Alternative because the No Build Alternative would not result in either temporary or permanent changes to the environment that could contribute to cumulative impacts.

2.23.6.1 Community Impacts

This section is based on the information from the following documents prepared for the project:

- *Community Impact Assessment* (December 2010)
- *Supplemental Memorandum to the Community Impact Assessment* (December 2011)
- *Second Supplemental Memorandum to the Community Impact Assessment* (January 2015)
- *Third Supplemental Memorandum to the Community Impact Assessment* (February 2015)

The cumulative resource study area (RSA) for community impacts comprises Census Tract 427.15, Census Tract 430.01, Census Tract 430.06, and Census Tract 464.04 in the City of Lake Elsinore. These census tracts could be reasonably affected by land acquisition, construction impacts, or displacements.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

Direct Impacts

Temporary road detours and access restrictions during construction would affect residents in the vicinity of the project census tract limits. However, those temporary impacts would be substantially minimized by implementation of a TMP. Substantial disruptions to the local neighborhoods in the project area during construction are not anticipated.

Alternative 2 would require the partial acquisition of 53 parcels (39 residentially zoned parcels and 14 commercially zoned parcels). Alternative 2 would also require the full acquisition of 12 residentially zoned parcels totaling 184,276 square feet (sf), including one single-family residence in the northwest quadrant of the planned I-15/Franklin Street interchange in the City.

Because the project would require the acquisition of a developed residential property, it would result in the displacement of this property's residents. However, it is not anticipated that the project would permanently divide the community itself since the area of permanent acquisitions is planned for redevelopment under the City of Lake Elsinore Redevelopment Agency. Under any of the Build Alternatives, only one residence would require relocation. As reported in the 2010 Census, a higher percentage of the residents who reside within the study area census tract for which the full residential acquisition would occur (Census Tract 430.01) are elderly, transit-dependent, or home–owners in comparison to the City of Lake Elsinore; this census tract demonstrates indicators of an area with a high potential for community cohesion. However, given the large size of the census tract incorporating multiple neighborhoods, it is likely that the residents could be relocated within their existing community. Therefore, no impacts to community cohesion would occur.

Because the overall proportions of minority and low-income persons in the project area census tracts are comparable to those within the City of Lake Elsinore, Alternative 2 would not result in temporary construction or permanent impacts that are predominantly borne by a minority or low-income population, nor would the project-related impacts be appreciably more severe to these populations. Therefore, Alternative 2 would not have disproportionately high or adverse direct impacts to minority populations, low-income, or transit-dependent residents within the reference populations, per Executive Order (EO) 12898 regarding environmental justice.

Indirect Impacts

Temporary indirect impacts to the community as a result of access restrictions and road detours during construction are not anticipated. Therefore, permanent indirect impacts to the surrounding community associated with displacements are not anticipated.

Cumulative Direct Impacts

The reasonably foreseeable projects identified by the City are infill projects on vacant properties or existing facilities (in the case of the transportation projects). Therefore, it is anticipated that there would be no displacements associated with these projects. Like the project, these projects are within the study area census tracts whose low-income and minority population percentages are consistent with the percentages in the City as a whole. Although Alternative 2 involves one residential displacement, it is consistent with approved plans that have focused on compatible surrounding land uses for economic/employee and residential/resident benefits. For these reasons, cumulative direct community impacts would not be adverse under this alternative.

Cumulative Indirect Impacts

Because the project is consistent with approved land use plans, indirect cumulative community impacts are not anticipated.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

Alternative 3 would require the acquisition of residential and commercial properties, resulting in the displacement of those residents and employees. Impacts associated with residential displacement would be the same for Alternative 3 as those identified for Alternative 2 because the same residential unit would be displaced under either alternative. As identified in Alternative 2, given the large size of the census tract incorporating multiple neighborhoods, it is likely that the residents could be relocated within their existing community.

Under Alternative 3, two businesses would be displaced by the project. Due to the current fragmented nature of this cluster of commercial properties (due to other land uses interspersed with the properties), these business acquisitions would not divide an existing neighborhood or fragment the edge of a cohesive group of people. In addition, the majority of acquisitions would consist of vacant properties bordering the I-15 southbound off-ramp for the proposed I-15/Franklin Street interchange or Casino Drive for the proposed I-15/Railroad Canyon Road interchange. Therefore, no adverse direct or indirect cumulative impacts to community cohesion would occur with this alternative.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

Alternative 4 would require the acquisition of one residential property, resulting in the displacement of those residents. Impacts associated with residential displacement would be the same for Alternative 4 as those identified for Alternative 2 because the same residential unit would be displaced under either alternative. As identified in Alternative 2, given the large size of the census tract incorporating multiple neighborhoods, it is likely that the residents could be relocated within their existing community.

2.23.6.2 Water Quality and Storm Water Runoff

This section is based on the following documents prepared for the project:

- *Water Quality Assessment Report* (WQAR) (June 2010)
- *Water Quality Assessment Supplemental Memorandum* (January 2015)

In the City and surrounding unincorporated County area, drainage is directed from east to west, south to north (south of Railroad Canyon Road to the San Jacinto River and from 1,200 ft north of the existing Franklin Street overcrossing to Main Street) and north to south (1,200 ft north of the existing Franklin Street overcrossing to the San Jacinto River). A series of south-north channels and underground storm drains transport drainage to the San Jacinto River or the Temescal Creek.

The project area is located within the San Jacinto Valley watershed of the Lake Elsinore-San Jacinto River Basin (Hydrologic Sub-Area (HSA) Hydrology Unit 802.31) and Temescal Creek (Reach 5). The only major drainage facility, the San Jacinto River, crosses I-15 north of the Railroad Canyon undercrossing and ultimately drains into Lake Elsinore. The distance from Lake Elsinore to the project site is approximately 0.5 mile.

The RSA for water quality and storm water runoff is the San Jacinto Valley watershed of the San Jacinto River Basin, which is a part of the Santa Ana River Watershed. The most serious regional issue in the Santa Ana River Watershed is degradation of water quality by nitrogen and total dissolved solids (TDS). Historically, the Santa Ana River and its major tributaries flowed year-round; however, diversion for irrigation has resulted in decreased flow and groundwater recharge.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

Direct Impacts

Pollutants of concern during construction include sediments, trash, petroleum products, concrete waste (dry and wet), sanitary waste, and chemicals. Each of these pollutants on its own or in combination with other pollutants can have a detrimental effect on water quality. During project-related construction activities, excavated soil would be exposed, and there would be an increased potential for soil erosion compared to existing conditions. Chemicals, liquid products, petroleum products (such as paints, solvents, and fuels), and concrete-related waste may be spilled or leaked, and may have the potential to be transported off the project site in storm water runoff into receiving waters.

Under the General Construction Activity National Pollutant Discharge Elimination System (NPDES) Permit, construction that would occur under Alternative 2 would be required to prepare a Storm Water Pollution Prevention Program (SWPPP) and implement construction BMPs detailed in the SWPPP during construction activities. Construction BMPs would be designed to minimize erosion and prevent spills.

Alternative 2 would alter the land use in the project area, replacing vacant, commercial, and residential uses with transportation uses that would change the concentrations of pollutants in storm water runoff. Runoff from the project area would be expected to contain higher concentrations of metals and oil and grease and lower levels of bacteria, viruses, nutrients, and pesticides compared to existing conditions.

As part of Alternative 2, BMPs would be implemented to target constituents of concern in storm water runoff from the project area. The project would not contribute to dry-weather runoff. Potential Treatment BMPs include biofiltration swales, media filters, and/or detention basins. The Treatment BMPs would target constituents of concern from transportation facilities and would provide a water quality benefit.

Indirect Impacts

Potential indirect water quality impacts include degradation of downstream waters or aquatic species. For example, aquatic habitats are sensitive to fluctuations in dissolved oxygen levels, turbidity, nutrients, and toxicity associated with urban runoff.

Because project Treatment BMPs would target constituents of concern from transportation facilities, and existing storm water runoff from the interchange is not currently treated, indirect impacts are not anticipated.

Cumulative Impacts

The existing trend of urbanization of the watershed is projected to continue. The continued conversion of undeveloped land to transportation, commercial/industrial, or residential uses would result in hydromodification and increased loading of pollutants into surface waters and indirectly into groundwater. It would also introduce new sources of pollutants associated with the new land uses. Land use changes can result in increased pollutant loading.

To counteract the impacts associated with increased development, each project must undergo review by the Lead Agency for compliance with NPDES permits for construction activities, groundwater dewatering, and project operations, as well as compliance with local urban runoff ordinances. For projects within Caltrans jurisdiction, this would include compliance with the Caltrans NPDES Permit (Order No. 2012-0011-DWQ, NPDES No. CAS000003), and the Storm Water Management Plan (SWMP). For projects within City of Lake Elsinore jurisdiction, this would include compliance with the Riverside County Flood Control and Water Conservation District NPDES permit (Order No. R8-2010-0033, NPDES No. CAS 618033). For other reasonably foreseeable projects, this includes compliance with the Riverside County Water Quality Management Plan (WQMP), as specified in local ordinances. BMPs must be employed in site design to reduce sources of pollutants and to treat storm water runoff.

Direct Impacts

The purpose of the NPDES permit program is to protect and restore the beneficial uses of receiving waters. Compliance with the NPDES program, based on land use and pollutants of concern, is considered sufficient to minimize impacts to water quality. Because Alternative 2 involves improvements to an existing freeway facility and includes treatment measures that currently do not exist, the project would not contribute considerably to cumulative direct water quality impacts.

Indirect Impacts

Because the treatment of storm water would reduce impacts to downstream waters and aquatic species, indirect cumulative impacts are not anticipated.

Alternative 3: Northbound Hook Ramps to Grape Street and Southbound Hook Ramps to Casino Drive

Cumulative impacts associated with Alternative 3 would be the same as those identified for Alternative 2. Therefore, Alternative 3 would not contribute considerably to cumulative direct and indirect impacts.

Alternative 4: Roundabout Alternative

Cumulative impacts associated with Alternative 4 would be the same as those identified for Alternative 2. Therefore, Alternative 4 would not contribute considerably to cumulative direct and indirect impacts.

2.23.6.3 Paleontology

This section is based on the following documents prepared for the project:

- *Paleontological Identification Report* and *Paleontological Evaluation Report* (PIR/PER) (April 2010)
- *Paleontological Resources Addendum Memorandum* (Memorandum) (February 2015)

The RSA for paleontology is the northern portion of the Elsinore Trough. The Elsinore Trough is a structural feature created by shearing along branches of the Elsinore Fault Zone. The Elsinore Fault is located along the west margin of the Perris Block, separating the latter from the Santa Ana Mountains of the Peninsular Range Physiographic Province to the south.

Geologic mapping indicates that the project area is located on deposits of late Holocene Alluvium and Holocene to late Pleistocene Alluvium (Qa and Qya) primarily derived from the west-flowing Santa Ana River. The geotechnical report indicates that excavation for the project will encounter Holocene to late Pleistocene deposits of sand and silt mixtures with some gravels (Qyf, Qyf1) and Old Pleistocene Alluvium (Qo), which is primarily sand and silt mixed with gravel stringers. These fossiliferous sediments crop out at the surface and may also be encountered below surface under most of the project.

Alternative 2: Northbound Hook Ramps to Grape Street

Direct Impacts

Alternative 2 would require ground disturbance and modification to existing freeway and local street structures. These construction activities could result in impacts to paleontological resources. The potential impacts to paleontological resources would be permanent impacts.

As discussed above, the project area has the potential for significant, nonrenewable paleontological resources to be encountered at depths greater than 3 ft below ground surface (bgs). Potentially fossiliferous sediments may be encountered during excavation for the project, which is currently estimated to be up to 7 ft bgs for normal excavation and deeper if cast-in-drilled-hole (CIDH) or driven piles are used for bridge supports. However, CIDH piles and driven piles are not conducive to the collection of paleontological resources, as the resources would usually not be visible and there would be no way to safely collect resources. Construction of some features of Alternative 2 would primarily be restricted to artificial fill or areas that cannot be physically monitored; however, it is very likely that sensitive sediments will be encountered during construction of the planned improvements.

Indirect Impacts

Impacts to paleontological resources are direct in nature; the physical impact to one resource does not indirectly affect another. Therefore, no indirect impacts would occur.

Cumulative Direct Impacts

All the reasonably foreseeable projects with deep excavation into Pleistocene Alluvium have the potential to result in adverse direct impacts to paleontological resources. Alternative 2 is required to implement a Paleontological Mitigation Plan (PMP), which includes monitoring and recovery of paleontological resources that are found during project construction. A PMP will be required for every project with high-sensitivity sediments that is subject to Caltrans' oversight. For other projects, implementation of and adherence to a Paleontological Resources Mitigation Program would be required to minimize impacts to resources within high-sensitivity sediments. Because Alternative 2 includes this requirement, this project's contribution to cumulative paleontological resources impacts would not be considerable.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

Cumulative impacts associated with Alternative 3 would be the same as those identified for Alternative 2. Therefore, Alternative 3 would not contribute considerably to cumulative direct and indirect paleontological resource impacts.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

Cumulative impacts associated with Alternative 4 would be the same as those identified for Alternative 2. Therefore, Alternative 4 would not contribute considerably to cumulative direct and indirect paleontological resource impacts.

2.23.6.4 Air Quality

This section is based on the following documents prepared for the project:

- *Air Quality Report* (March 2015)
- *Air Quality Conformity Analysis* (June 2017)

The project is located within the South Coast Air Basin, which includes Orange County and the non-desert parts of Los Angeles, Riverside, and San Bernardino Counties. For the purpose of this analysis, the RSA for air quality is the area immediately adjacent to the I-15 project limits that would be directly affected by construction emissions and vehicle emissions from operation of the completed project.

Ambient air quality data in the RSA, as summarized in Table 2.15.A, show that CO, SO_2, and NO_2 levels are below the relevant State and Federal standards at the Lake Elsinore and Rubidoux Stations. One-hour ozone levels exceeded the State standards in each of the past 3 years. Eight-hour ozone levels exceeded the federal standard in each of the past 3 years. The PM_{10} levels in the RSA did not exceed State or Federal 24-hour concentration standards in the past 3 years; however the annual average concentration of PM_{10} exceeded the State standard in each of the past 3 years. The $PM_{2.5}$ levels in the RSA exceeded the Federal 24-hour concentration standard in each of the past 3 years, as well as the State and Federal annual average concentration standards for each of the past 3 years. It should be noted that exceedance of a standard is not necessarily a violation, especially for many Federal standards.

An important consideration in considering the potential for cumulative air quality impacts of the project is that the project is listed in the 2016 financially constrained RTP/SCS Amendment No. 1, which was found to conform to the SIP by the SCAG on April 12, 2017, and FHWA and FTA made a regional conformity determination finding on May 12, 2017. The project is also included in the SCAG financially constrained 2017 Federal Transportation Improvement Program in Amendment 17-03, page 4, for which FHWA and FTA also made a regional conformity determination finding on May 12, 2017.

The reasonably foreseeable actions would occur in the areas where cumulative projects would be constructed that are located throughout the City. Projects with particular relevance to air quality impacts are shown in Table 2.1.A and include construction projects, projects that would result in an increase in vehicle trips and traffic congestion, and projects that would result in additional stationary source emissions.

ALL BUILD ALTERNATIVES

Direct and Indirect Impacts

Construction. All Build Alternatives would require ground disturbance and modification to existing freeway and local street structures. These construction activities would result in emissions of ROGs, CO, NO_X, and particulate matter (PM_{10} and $PM_{2.5}$). Maximum project construction emissions for Alternative 2 are identified in Table 2.15.C. As shown in Table 2.15.C, maximum daily construction emissions of criteria pollutants do not exceed daily SCAQMD significance thresholds for each criteria pollutant. With the implementation of standard construction measures (providing 50 percent effectiveness) such as frequent watering (e.g., minimum twice per day) and **Minimization Measures AQ-1** through **AQ-5**, presented in Section 2.15.4, fugitive dust and exhaust emissions from construction activities would be minimized. No significant impacts related to a violation of an air quality standard or a substantial contribution to and existing or proposed air quality violation would occur with implementation of any of the Build Alternatives.

The project is located in Riverside County, which is not among the counties listed as containing serpentine and ultramafic rock. There are no impacts associated with naturally occurring asbestos.

Operation. The Build Alternatives were also evaluated for long term operational emissions of CO, particulate matter (PM_{10} and $PM_{2.5}$), and MSATs. Because these long-term operational air quality analyses are based upon the 2040 traffic forecasts which include future population and employment growth as well as future transportation improvement projects, the analysis provided in Section 2.15.3.3 is already cumulative in nature. As concluded in Section 2.15.3.3 following the CO protocol, the project is not expected to result in any concentrations exceeding the 1-hour or 8-hour CO standards. As previously discussed in Section 2.15.3.3, the project-level particulate matter hot-spot analysis was presented to SCAG's TCWG for discussion and review on February 24, 2015. This project was approved and concurred on by Interagency Consultation at the TCWG meeting as Not a Project of Air Quality Concern. Therefore, PM_{10} and $PM_{2.5}$ emissions resulting from the project would not be cumulatively considerable..

Lastly, under each Build Alternative there may be localized areas where VMT would increase, and other areas where VMT would decrease. Therefore, it is possible that localized increases and decreases in MSAT emissions may occur. The localized increases in MSAT emissions would likely be most pronounced along the new roadway sections that would be built at the new Franklin Street overcrossing, under all Build Alternatives. However, even if these increases do occur, they too will be substantially reduced in the future due to implementation of EPA's vehicle and fuel regulations. Therefore, under all Build Alternatives in the design year, it is expected there would be reduced MSAT emissions in the immediate area of the project, relative to the No Build Alternative, due to the reduced VMT associated with more direct routing, and due to EPA's MSAT reduction programs.

Cumulative Impacts

All the reasonably foreseeable projects have the potential to result in emissions from project construction; however, all land development and public infrastructure projects are required to comply with SCAQMD requirements for construction emissions; therefore, this project's contribution to cumulative construction emissions impacts would not be considerable.

Because the project is not expected to result in any concentrations exceeding the 1-hour or 8-hour CO standards and the project is not a Project of Air Quality Concern for particulate matter emissions, CO, PM_{10} and $PM_{2.5}$ emissions resulting from the project would not be cumulatively considerable.

Because there would be reduced MSAT emissions in the immediate area of the project, relative to the No Build Alternative due to the reduced VMT associated with more direct routing, and due to EPA's MSAT reduction programs, no cumulative impacts associated with MSAT emissions would occur as a result of the project.

2.23.6.5 Wetlands and Other Waters

The cumulative study area for wetlands and other waters is western Riverside County, specifically the Santa Ana River and San Jacinto River watersheds. Historically, the health of this resource has declined as over 80 percent of historical wetlands in California have been destroyed. Major loss of wetland habitat occurred during the mid-1950s to mid-1970s but, since then, the rate of loss has decreased. Currently, the health of this resource is determined to a large extent by the effectiveness of federal restoration efforts.

Approximately 60 percent of western Riverside County (752,870 acres out of the 1,258,780 acres) within the Multiple Species Habitat Conservation Plan (MSHCP) Plan Area is reasonably foreseeable for development, based on anticipated impacts projected by the MSHCP within the next 75 years. Planned activities that are covered under the MSHCP include seven types of roadways, freeways, Community and Environmental Transportation Acceptability Process (CETAP) corridors, and other major facilities that have been identified in the Riverside County General Plan Circulation Element, flood control facilities, waste/wastewater facilities, electrical utility facilities, and natural gas facilities. The guidelines in the MSHCP include design criteria that avoid and minimize impacts to sensitive habitats known to occur in the vicinity of planned development and planned roadways, including riparian and riverine environments.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

Direct Impacts

Alternative 2 would permanently affect 0.211 acre of potential jurisdictional non-wetland waters of the U.S. No wetland waters of the United States (U.S.) would be affected. In addition, 0.280 acre of California Department of Fish and Wildlife (CDFW) regulated streambed would be permanently affected by the project. Permits will be required for project effects and include a CWA Section 404 permit authorization from the United States Air Corps of Engineers (USACE), a Clean Water Act (CWA) Section 401 Water Quality Certification from the RWQCB, and a Fish and Game Code Section 1602 Streambed Alteration Agreement from the CDFW. With implementation of identified measures in Section 2.16.4, the potential permanent project impacts to potential USACE non-wetland waters and CDFW jurisdictional areas would not be adverse.

Indirect Impacts

There is the potential for temporary indirect water quality impacts through sediment introduction and transport downstream under Alternative 2. Identification and implementation of erosion, sedimentation, and pollution prevention BMPs in the SWPPP (refer to Section 2.11) for the project would avoid or minimize indirect impacts to jurisdictional waters during construction. With implementation of the measures outlined in Section 2.18.4, in addition to the water quality measures presented in Section 2.11, potential temporary impacts to wetlands and other waters would not be adverse under this alternative.

Cumulative Direct Impacts

The cumulative projects in the project area would be subject to similar mitigation requirements as the project. Because each cumulative project would be required to replace impacted wetlands and non-wetland waters, additional mitigation for cumulative effects of the project is not required. Therefore, this project's contribution to cumulative wetland and other waters resource impacts would not be considerable.

Cumulative Indirect Impacts

No indirect cumulative impacts are associated with this resource.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

Cumulative impacts associated with Alternative 3 would be the same as those identified for Alternative 2. Therefore, Alternative 3 would not contribute considerably to cumulative direct and indirect impacts associated with wetlands or other waters.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

Cumulative impacts associated with Alternative 4 would be the same as those identified for Alternative 2. Therefore, Alternative 4 would not contribute considerably to cumulative direct and indirect impacts associated with wetlands or other waters.

2.23.6.6 Animal Species

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

The BSA for animal species is Western Riverside County. Historically, the health of this resource has been degraded by development over time. Since its approval in 2004, implementation of the Western Riverside County MSHCP allows for development of covered activities while maintaining the health of this resource by providing for conservation of species and habitats and a coordinated system of linkages that provides for wildlife connectivity between conservation areas. The MSHCP provides guidelines that would avoid and minimize impacts to sensitive animal habitats known to occur in the vicinity of planned development and planned roadways while permitting continued development and the construction, operation, and maintenance of roadways.

Direct Impacts

Alternative 2 would require ground disturbance and modification to existing freeway and local street structures. These construction activities could result in impacts to suitable nesting habitat for several bird species. With implementation of identified measures, potential temporary impacts during project construction to migratory birds would not be adverse. The potential impacts to these biological resources would be both temporary and permanent impacts. Ongoing development in the project area would further reduce the range and number of special-status species. These species have no official status, but under CEQA they require consideration. However, due to the marginal, disturbed nature of the existing habitat conditions within the BSA, the project would not have substantial effects on these species.

Indirect Impacts

Much of the habitat within the project study area has been fragmented by existing I-15 and residential and commercial development. I-15 is a regional barrier to east and west wildlife movement through the BSA and surrounding areas. Therefore, it is anticipated that no indirect impacts would occur under this alternative.

Cumulative Direct Impacts

Adverse effects to burrowing owl may occur as a result of impacts to potentially suitable habitat and/or nesting sites on the project site. The MSHCP is designed to mitigate for impacts to covered species and habitat on a regional scale. Through participation in the MSHCP and implementation of the avoidance, minimization, and mitigation measures identified above, no substantial cumulative effects are anticipated to occur to burrowing owl or its habitat.

Cumulative Indirect Impacts

Potential indirect biological resource impacts include degradation of adjacent habitat, night lighting from other projects in the area, and an increase in traffic noise. However, the MSHCP is designed to mitigate for impacts to covered species and habitat on a regional scale. Through participation in the MSHCP and implementation of the avoidance, minimization, and mitigation measures, no substantial cumulative effects are anticipated to occur.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

Cumulative impacts associated with Alternative 3 would be the same as those identified for Alternative 2. Therefore, Alternative 3 would not contribute considerably to cumulative direct and indirect special-status animal species impacts.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

Cumulative impacts associated with Alternative 4 would be the same as those identified for Alternative 2. Therefore, Alternative 4 would not contribute considerably to cumulative direct and indirect special-status animal species impacts.

2.23.6.7 Threatened and Endangered Species

The RSA for threatened and endangered species is Western Riverside County. Historically, the health of this resource has been degraded by development over time. Threatened and endangered species and their habitats are protected under the Federal Endangered Species Act (FESA): 16 United States Code (USC), Section 1531, et seq. See also 50 CFR Part 402 and the California Endangered Species Act (CESA), California Fish and Game Code, Section 2050, et seq. Project proponents are required to consult with the USFWS and the CDFW to ensure that they do not jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat.

ALTERNATIVE 2: NORTHBOUND HOOK RAMPS TO GRAPE STREET

Direct Impacts

Two pairs of least Bell's vireos (LBV) were found within the Biological Study Area (BSA) within the San Jacinto River during spring 2009 focused surveys conducted in support of the 2010 Natural Environment Study (NES). The LBV territories are not within, but adjacent to the proposed construction limits, and critical habitat for the LBV is not present within the BSA. Therefore, no direct effects to the LBV or its habitat would occur as a result of the project. No signs or critical habitat for the southwestern willow flycatcher (SWWF) occur within the BSA. No direct impacts to the SWWF would occur under Alternative 2.

Under Section 7 of the FESA, the project poses a "may affect, likely to adversely affect" through removal of potentially occupied habitat. However, the Habitat Conservation Plan for the Stephens' Kangaroo Rat in Western Riverside County (Riverside County Habitat Conservation Agency, February 1995) provides full mitigation for impacts under CEQA, NEPA, CESA, and FESA. Therefore, with implementation of **Measure TE-1**, potential temporary impacts during project construction to Stephens' kangaroo rat would be reduced.

Indirect Impacts

In the future, there may be an increase of traffic noise and additional nighttime light spill on the San Jacinto River, as well as the degradation of riparian habitat as a result of off-site development nearby, which may affect the LBV and SWWF indirectly. However, the MSHCP is designed to mitigate for impacts to covered species and habitat on a regional scale. Through participation in the MSHCP and implementation of the avoidance, minimization, and mitigation measures identified above, no substantial cumulative effects are anticipated to occur to the threatened or endangered species.

The Stephens' kangaroo rat is an MSHCP Covered Species, and the cumulative effects are addressed as part of the Stephens' Kangaroo Rat Habitat Conservation Plan. Thus, the project would not have substantial cumulative effects to the Stephens' kangaroo rat.

Cumulative Direct Impacts

All the reasonably foreseeable projects with the potential to affect threatened or endangered species would be required to mitigate for the loss of the habitat or of the species itself. The project is required to implement avoidance, minimization, and mitigation measures for species affected by construction of the project. Such measures will be required for every project with impacts to threatened or endangered species that is subject to Caltrans' oversight. Because the project includes these requirements and measures, this project's contribution to cumulative biological resources impacts would not be considerable.

Cumulative Indirect Impacts

In the future, there may be an increase of traffic noise and additional nighttime light spill on the San Jacinto River, as well as the degradation of riparian habitat as a result of off-site development nearby. The MSHCP is designed to mitigate for impacts to covered species and habitat on a regional scale. Through participation in the MSHCP and implementation of the avoidance, minimization, and mitigation measures identified above, no substantial cumulative effects are anticipated to occur to nesting birds.

Stephens' kangaroo rat is an MSHCP Covered Species, and the cumulative effects are addressed as part of the Stephens' Kangaroo Rat Habitat Conservation Plan. Thus, the project would not have substantial cumulative effects to the Stephens' kangaroo rat.

ALTERNATIVE 3: NORTHBOUND HOOK RAMPS TO GRAPE STREET AND SOUTHBOUND HOOK RAMPS TO CASINO DRIVE

The impacts associated with threatened or endangered species within the BSA would be the same for Alternative 3 as those identified for Alternative 2. Therefore, with implementation of identified measures, potential temporary indirect effects to the LBV, SWWF, and their habitat would not be adverse under this alternative. With implementation of **Measure TE-1**, potential temporary impacts during project construction to Stephens' kangaroo rat would be reduced under this alternative.

Cumulative impacts associated with Alternative 3 would be the same as those identified for Alternative 2. Therefore, Alternative 3 would not contribute considerably to cumulative direct and indirect threatened or endangered species impacts.

ALTERNATIVE 4: ROUNDABOUT ALTERNATIVE

The impacts associated with threatened or endangered species within the BSA would be the same for Alternative 4 as those identified for Alternative 2. Therefore, with implementation of identified measures, potential temporary indirect effects to the LBV, SWWF, and their habitat would not be adverse under this alternative. With implementation of **Measure TE-1**, potential temporary impacts during project construction to Stephens' kangaroo rat would be reduced under this alternative.

Cumulative impacts associated with Alternative 4 would be the same as those identified for Alternative 2. Therefore, Alternative 4 would not contribute considerably to cumulative direct and indirect threatened or endangered species impacts.

CEQA DISCUSSION

XVIV. b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)

<u>**Less Than Significant With Mitigation.**</u> The project would have impacts that are individually limited but are not cumulatively considerable with mitigation and minimization measures. Adherence to **Mitigation Measures AN-1**, presented above in Section 2.20.4**, PAL-1** (Section 2.13.4), and **WET-3** (Section 2.18.4), and **Minimization Measures WQ-1, WQ-2** (Section 2.11.4)**, AQ-1** through **AQ-5** (Section 2.15.4)**, WET-1** through **WET-3** (Section 2.18.4), and **TR-1** (Section 2.7.4) would reduce cumulative impacts to a less than significant impact level.

XVIV. c) Does the project have environmental effects, which will cause substantial adverse effects on human beings, either directly or indirectly?

<u>**Less Than Significant Impact.**</u> The project does not have the potential to significantly adversely affect humans, either directly or indirectly, with implementation of minimization measures. With the identified **Minimization Measures HAZ-1** through **HAZ-7**, presented above in Section 2.14.4, **N-1** (Section 2.16.4), **AQ-1** through **AQ-5** (Section 2.15.4), and **TR-1** (Section 2.7.4), which are standard requirements, these impacts would remain less than significant.

2.23.7 Avoidance, Minimization, and/or Mitigation Measures

No measures beyond those identified in Sections 2.1 through 2.23 are required to address the Build Alternative's contribution to cumulative impacts. Those measures address both temporary and permanent impacts.

This page intentionally left blank

2.24 Climate Change

Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the earth's climate system. An ever-increasing body of scientific research attributes these climatological changes to greenhouse gases (GHGs), particularly those generated from the production and use of fossil fuels.

While climate change has been a concern for several decades, the establishment of the Intergovernmental Panel on Climate Change (IPCC) by the United Nations and World Meteorological Organization's in 1988, has led to increased efforts devoted to GHG emissions reduction and climate change research and policy. These efforts are primarily concerned with the emissions of GHGs generated by human activity, including carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), tetrafluoromethane, hexafluoroethane, sulfur hexafluoride (SF_6), HFC-23 (fluoroform), HFC-134a (s, s, s, 2 –tetrafluoroethane), and HFC-152a (difluoroethane).

In the U.S., the main source of GHG emissions is electricity generation, followed by transportation.[1] In California, however, transportation sources (including passenger cars, light-duty trucks, other trucks, buses, and motorcycles) are the largest contributors of GHG emissions.[2] The dominant GHG emitted is CO_2, mostly from fossil fuel combustion.

Two terms are typically used when discussing how we address the impacts of climate change: "greenhouse gas mitigation" and "adaptation." "Greenhouse gas mitigation" is a term for reducing GHG emissions to reduce or "mitigate" the impacts of climate change. "Adaptation" refers to planning for and responding to impacts resulting from climate change (such as adjusting transportation design standards to withstand more intense storms and higher sea levels).

2.24.1 Regulatory Setting

This section outlines federal and State efforts to comprehensively reduce GHG emissions from transportation sources.

2.24.1.1 Federal

To date, no national standards have been established for nationwide mobile-source GHG reduction targets, nor have any regulations or legislation been enacted specifically to address climate change and GHG emissions reduction at the project level.

The National Environmental Policy Act (NEPA) (42 United States Code [USC] Part 4332) requires federal agencies to assess the environmental effects of their proposed actions prior to making a decision on the action or project.

The Federal Highway Administration (FHWA) recognizes the threats that extreme weather, sea-level change, and other changes in environmental conditions pose to valuable transportation infrastructure and those who depend on it. FHWA therefore supports a sustainability approach that assesses vulnerability to climate risks and incorporates resilience into planning, asset management, project development and design, and operations and maintenance practices.[3] This approach encourages planning for sustainable highways by addressing climate risks while

1 Website: https://www.epa.gov/ghgemissions/us-greenhouse-gas-inventory-report-1990-2014.
2 Website: https://www.arb.ca.gov/cc/inventory/data/data.htm.
3 Website: https://www.fhwa.dot.gov/environment/sustainability/resilience/.

balancing environmental, economic, and social values—"the triple bottom line of sustainability."[1] Program and project elements that foster sustainability and resilience also support economic vitality and global efficiency, increase safety and mobility, enhance the environment, promote energy conservation, and improve the quality of life. Addressing these factors up front in the planning process will assist in decision-making and improve efficiency at the program level, and will inform the analysis and stewardship needs of project-level decision-making.

Various efforts have been promulgated at the federal level to improve fuel economy and energy efficiency to address climate change and its associated effects.

The Energy Policy Act of 1992 (EPACT92, 102nd Congress H.R.776.ENR): With this act, Congress set goals, created mandates, and amended utility laws to increase clean energy use and improve overall energy efficiency in the United States. EPACT92 consists of 27 titles detailing various measures designed to lessen the nation's dependence on imported energy, provide incentives for clean and renewable energy, and promote energy conservation in buildings. Title III of EPACT92 addresses alternative fuels. It gave the U.S. Department of Energy administrative power to regulate the minimum number of light-duty alternative fuel vehicles required in certain federal fleets beginning in fiscal year 1993. The primary goal of the Program is to cut petroleum use in the United States by 2.5 billion gallons per year by 2020.

Energy Policy Act of 2005 (109th Congress H.R.6 (2005–2006): This act sets forth an energy research and development program covering: (1) energy efficiency; (2) renewable energy; (3) oil and gas; (4) coal; (5) Indian energy; (6) nuclear matters and security; (7) vehicles and motor fuels, including ethanol; (8) hydrogen; (9) electricity; (10) energy tax incentives; (11) hydropower and geothermal energy; and (12) climate change technology.

Energy Policy and Conservation Act of 1975 (42 USC Section 6201) and Corporate Average Fuel Standards: This act establishes fuel economy standards for on-road motor vehicles sold in the United States. Compliance with federal fuel economy standards is determined through the Corporate Average Fuel Economy (CAFE) program on the basis of each manufacturer's average fuel economy for the portion of its vehicles produced for sale in the United States.

Executive Order 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, 74 *Federal Register* 52117 (October 8, 2009): This federal EO set sustainability goals for federal agencies and focuses on making improvements in their environmental, energy, and economic performance. It instituted as policy of the United States that federal agencies measure, report, and reduce their GHG emissions from direct and indirect activities.

Executive Order 13693, *Planning for Federal Sustainability in the Next Decade*, 80 Federal Register 15869 (March 2015): This EO reaffirms the policy of the United States that federal agencies measure, report, and reduce their GHG emissions from direct and indirect activities. It sets sustainability goals for all agencies to promote energy conservation, efficiency, and management by reducing energy consumption and GHG emissions. It builds on the adaptation and resiliency goals in previous executive orders to ensure agency operations and facilities prepare for impacts of climate change. This order revokes Executive Order 13514.

U.S. EPA's authority to regulate GHG emissions stems from the U.S. Supreme Court decision in *Massachusetts* v. *EPA* (2007). The Supreme Court ruled that GHGs meet the definition of air pollutants under the existing Clean Air Act and must be regulated if these gases could be

1 FHWA. Sustainable Highways Initiative. Website: https://www.sustainablehighways.dot.gov/overview.aspx.

reasonably anticipated to endanger public health or welfare. Responding to the Court's ruling, U.S. EPA finalized an endangerment finding in December 2009. Based on scientific evidence it found that six GHGs constitute a threat to public health and welfare. Thus, it is the Supreme Court's interpretation of the existing Act and EPA's assessment of the scientific evidence that form the basis for EPA's regulatory actions.

U.S. EPA in conjunction with the National Highway Traffic Safety Administration (NHTSA) issued the first of a series of GHG emission standards for new cars and light-duty vehicles in April 2010[1] and significantly increased the fuel economy of all new passenger cars and light trucks sold in the United States. The standards required these vehicles to meet an average fuel economy of 34.1 miles per gallon by 2016. In August 2012, the federal government adopted the second rule that increases fuel economy for the fleet of passenger cars, light-duty trucks, and medium-duty passenger vehicles for model years 2017 and beyond to average fuel economy of 54.5 miles per gallon by 2025. Because NHTSA cannot set standards beyond model year 2021 due to statutory obligations and the rules' long timeframe, a mid-term evaluation is included in the rule. The Mid-Term Evaluation is the overarching process by which NHTSA, EPA, and ARB will decide on CAFE and GHG emissions standard stringency for model years 2022–2025. NHTSA has not formally adopted standards for model years 2022 through 2025. However, the EPA finalized its mid-term review in January 2017, affirming that the target fleet average of at least 54.5 miles per gallon by 2025 was appropriate. In March 2017, President Trump ordered EPA to reopen the review and reconsider the mileage target.[2]

NHTSA and EPA issued a Final Rule for "Phase 2" for medium- and heavy-duty vehicles to improve fuel efficiency and cut carbon pollution in October 2016. The agencies estimate that the standards will save up to 2 billion barrels of oil and reduce CO_2 emissions by up to 1.1 billion metric tons over the lifetimes of model year 2018–2027 vehicles.

Presidential Executive Order 13783, *Promoting Energy Independence and Economic Growth*, of March 28, 2017, orders all federal agencies to apply cost-benefit analyses to regulations of GHG emissions and evaluations of the social cost of carbon, nitrous oxide, and methane.

2.24.1.2 State

With the passage of legislation including State Senate and Assembly bills and executive orders, California has been innovative and proactive in addressing GHG emissions and climate change.

Assembly Bill 1493, Pavley Vehicular Emissions: Greenhouse Gases, 2002: This bill requires the California Air Resources Board (ARB) to develop and implement regulations to reduce automobile and light truck GHG emissions. These stricter emissions standards were designed to apply to automobiles and light trucks beginning with the 2009-model year.

Executive Order S-3-05 (June 1, 2005): The goal of this executive order (EO) is to reduce California's GHG emissions to: (1) year 2000 levels by 2010, (2) year 1990 levels by 2020, and (3) 80 percent below year 1990 levels by 2050. This goal was further reinforced with the passage of Assembly Bill 32 in 2006 and Senate Bill 32 in 2016.

---

[1] C2ES. EPA Greenhouse Gas Regulation FAQ. Website: http://www.c2es.org/federal/executive/epa/greenhouse-gas-regulation-faq.

[2] NBC News.com. Website: http://www.nbcnews.com/business/autos/trump-rolls-back-obama-era-fuel-economy-standards-n734256 and Federal Register: Notice of Intention. Website: https://www.federalregister.gov/documents/2017/03/22/2017-05316/notice-of-intention-to-reconsider-the-final-determination-of-the-mid-term-evaluation-of-greenhouse.

Assembly Bill 32 (AB 32), Chapter 488, 2006: Núñez and Pavley, The Global Warming Solutions Act of 2006: AB 32 codified the 2020 GHG emissions reduction goals as outlined in EO S-3-05, while further mandating that ARB create a scoping plan and implement rules to achieve “real, quantifiable, cost-effective reductions of greenhouse gases.” The Legislature also intended that the statewide GHG emissions limit continue in existence and be used to maintain and continue reductions in emissions of GHGs beyond 2020 (Health and Safety Code Section 38551(b)). The law requires ARB to adopt rules and regulations in an open public process to achieve the maximum technologically feasible and cost-effective GHG reductions.

Executive Order S-20-06 (October 18, 2006): This order establishes the responsibilities and roles of the Secretary of the California Environmental Protection Agency (Cal/EPA) and state agencies with regard to climate change.

Executive Order S-01-07 (January 18, 2007): This order sets forth the low carbon fuel standard (LCFS) for California. Under this EO, the carbon intensity of California’s transportation fuels is to be reduced by at least 10 percent by the year 2020. ARB re-adopted the LCFS regulation in September 2015, and the changes went into effect on January 1, 2016. The program establishes a strong framework to promote the low-carbon fuel adoption necessary to achieve the Governor's 2030 and 2050 GHG reduction goals.

Senate Bill 97 (SB 97), Chapter 185, 2007, Greenhouse Gas Emissions: This bill requires the Governor's Office of Planning and Research (OPR) to develop recommended amendments to the California Environmental Quality Act (CEQA) Guidelines for addressing GHG emissions. The amendments became effective on March 18, 2010.

Senate Bill 375 (SB 375), Chapter 728, 2008, Sustainable Communities and Climate Protection: This bill requires ARB to set regional emissions reduction targets for passenger vehicles. The Metropolitan Planning Organization (MPO) for each region must then develop a "Sustainable Communities Strategy" (SCS) that integrates transportation, land-use, and housing policies to plan how it will achieve the emissions target for its region.

Senate Bill 391 (SB 391), Chapter 585, 2009, California Transportation Plan: This bill requires the State’s long-range transportation plan to meet California’s climate change goals under AB 32.

Executive Order B-16-12 (March 2012) orders State entities under the direction of the Governor, including ARB, the California Energy Commission, and the Public Utilities Commission, to support the rapid commercialization of zero-emission vehicles. It directs these entities to achieve various benchmarks related to zero-emission vehicles.

Executive Order B-30-15 (April 2015) establishes an interim statewide GHG emission reduction target of 40 percent below 1990 levels by 2030 in order to ensure California meets its target of reducing GHG emissions to 80 percent below 1990 levels by 2050. It further orders all state agencies with jurisdiction over sources of GHG emissions to implement measures, pursuant to statutory authority, to achieve reductions of GHG emissions to meet the 2030 and 2050 GHG emissions reductions targets. It also directs ARB to update the Climate Change Scoping Plan to express the 2030 target in terms of million metric tons of carbon dioxide equivalent ($MMTCO_2e$). Finally, it requires the Natural Resources Agency to update the State’s climate adaptation strategy, *Safeguarding California*, every 3 years, and to ensure that its provisions are fully implemented.

Senate Bill 32, (SB 32) Chapter 249, 2016, codifies the GHG reduction targets established in EO B-30-15 to achieve a mid-range goal of 40 percent below 1990 levels by 2030.

2.24.2 Environmental Setting

In 2006, the Legislature passed the California Global Warming Solutions Act of 2006 (AB 32), which created a comprehensive, multi-year program to reduce GHG emissions in California. AB 32 required ARB to develop a Scoping Plan that describes the approach California will take to achieve the goal of reducing GHG emissions to 1990 levels by 2020. The Scoping Plan was first approved by ARB in 2008 and must be updated every 5 years. ARB approved the *First Update to the Climate Change Scoping Plan* on May 22, 2014. ARB is moving forward with a discussion draft of an updated Scoping Plan that will reflect the 2030 target established in EO B-30-15 and SB 32.

The AB 32 Scoping Plan and the subsequent updates contain the main strategies California will use to reduce GHG emissions. As part of its supporting documentation for the Draft Scoping Plan, ARB released the GHG inventory for California.[1] ARB is responsible for maintaining and updating California's GHG Inventory per Health and Safety Code Section 39607.4. The associated forecast/projection is an estimate of the emissions anticipated to occur in the year 2020 if none of the foreseeable measures included in the Scoping Plan were implemented.

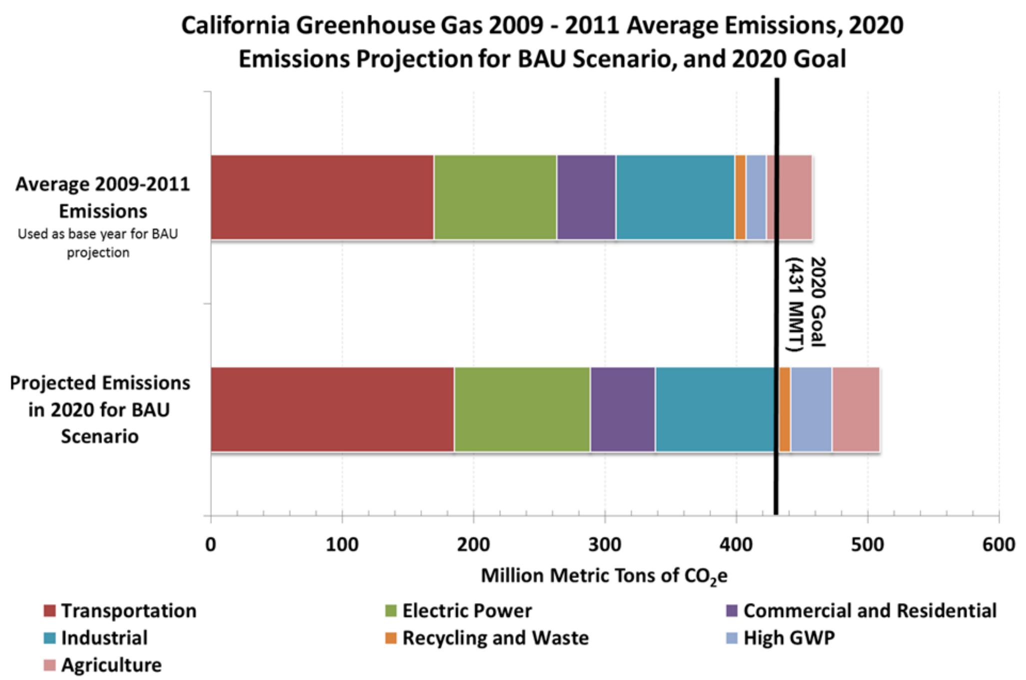
An emissions projection estimates future emissions based on current emissions, expected regulatory implementation, and other technological, social, economic, and behavioral patterns. The projected 2020 emissions provided in Figure 2.24.1 represent a business-as-usual (BAU) scenario assuming none of the Scoping Plan measures are implemented. The 2020 BAU emissions estimate assists ARB in demonstrating progress toward meeting the 2020 goal of 431 $MMTCO_2e$.[2] The 2017 edition of the GHG emissions inventory (released June 2017) found total California emissions of 440.4 $MMTCO_2e$, showing progress towards meeting the AB 32 goals.

The 2020 BAU emissions projection was revisited in support of the First Update to the Scoping Plan (2014). This projection accounts for updates to the economic forecasts of fuel and energy demand as well as other factors. It also accounts for the effects of the 2008 economic recession and the projected recovery. The total emissions expected in the 2020 BAU scenario include reductions anticipated from Pavley I and the Renewable Electricity Standard (30 $MMTCO_2e$ total). With these reductions in the baseline, estimated 2020 statewide BAU emissions are 509 $MMTCO_2e$.

1 ARB. 2017 Edition of the GHG Emission Inventory, released June 2017. Website: https://www.arb.ca.gov/cc/inventory/data/data.htm.

2 The revised target using Global Warming Potentials (GWP) from the IPCC Fourth Assessment Report (AR4).

Figure 2.24.1: 2020 Business as Usual (BAU) Emissions Projection 2014 Edition



https://www.arb.ca.gov/cc/inventory/data/bau.htm

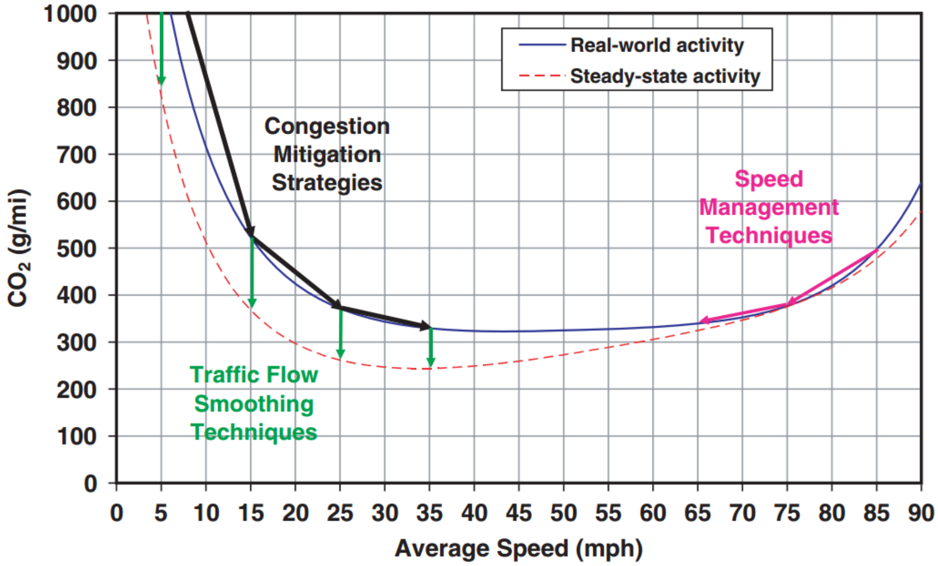
2.24.3 Project Analysis

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 contribute to a potential impact through its *incremental* change in emissions when combined with the contributions of all other sources of GHG.[1] In assessing cumulative impacts, it must be determined if a project's incremental effect is "cumulatively considerable" (CEQA Guidelines Sections 15064(h)(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.

GHG emissions for transportation projects can be divided into those produced during operations and those produced during construction. The following represents a best faith effort to describe the potential GHG emissions related to the proposed project.

1 This approach is supported by the AEP: Recommendations by the Association of Environmental Professionals on How to Analyze GHG Emissions and Global Climate Change in CEQA Documents (March 5, 2007), as well as the South Coast Air Quality Management District (Chapter 6: The CEQA Guide, April 2011) and the U.S. Forest Service (Climate Change Considerations in Project Level NEPA Analysis, July 13, 2009).

Figure 2.24.2: Possible Use of Traffic Operation Strategies in Reducing On-Road CO_2 Emissions



Source: *Matthew Barth and Kanok Boriboonsomsin, University of California, Riverside* (May 2010) *(*http://uctc.berkeley.edu/research/papers/846.pdf*).*

Four primary strategies can reduce GHG emissions from transportation sources: (1) improving the transportation system and operational efficiencies, (2) reducing travel activity, (3) transitioning to lower GHG-emitting fuels, and (4) improving vehicle technologies/efficiency. To be most effective all four strategies should be pursued concurrently.

FHWA supports these strategies to lessen climate change impacts, which correlate with efforts that the State of California is undertaking to reduce GHG emissions from the transportation sector.

The highest levels of CO_2 from mobile sources such as automobiles occur at stop-and-go speeds (0–25 miles per hour) and speeds over 55 miles per hour; the most severe emissions occur from 0–25 miles per hour (see Figure 2.24.2 above). 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 purpose of the project is to (1) relieve congestion by improving traffic operations and meet traffic demands through improvements of the I-15/Railroad Canyon Road interchange, (2) correct the merging and diverging freeway and ramp improvements, (3) help achieve the Regional Mobility Plan goals of reducing emissions from transportation sources, and (4) enhance the efficiency of the interchange, thereby reducing congestion. SCAG included an SCS as part of its 2016 RTP/SCS. Under SB 375, the primary goal of the SCS is to provide a vision for future growth that will decrease per capita GHG emissions from automobiles and light trucks. By providing improved interchange connections, the Build Alternatives would help achieve the improved access and mobility goals of SCAG’s 2016 RTP/SCS. Under SB 375, the primary goal of the SCS is to provide a vision for future growth that will decrease per capita GHG emissions from automobiles and light trucks. By providing improved interchange connections, the Build Alternative would help achieve the improved access and mobility goals of SCAG’s 2016 RTP/SCS.

Due to the high cost of constructing Alternative 2, 3, or 4 improvements as one entire project, it was determined that the entire project could be divided into two viable cost-effective phased segments with logical termini. This resulted in identifying two separate phases as outlined below:

- Phase 1 – Construct the I-15/Railroad Canyon Road Interchange including ramp acceleration and deceleration lanes.
- Phase 2 – Construct the new I-15/Franklin Street interchange, including frontage roads, auxiliary lanes to Main Street and Railroad Canyon Road, and the southbound Main Street entrance ramps.

Analyses of GHG emissions were performed for the following conditions:

- 2013 Existing Year
- 2019 Phase 1 Opening Year for Alternatives 1, 2, 3, and 4
- Phase 1 Failure Year for Alternatives 2, 3, and 4
- Phase 2 Opening Year for Alternatives 2, 3, and 4
- 2040 Design Year for Alternatives 1, 2, 3 and 4

Failure Year traffic volumes for the freeway, roadways, and intersections within the study area were developed using the methodology described in the *Supplemental Traffic Impact Analysis Report* (November 2014). The Failure Year traffic volumes for the three Build Alternatives were determined once an LOS of “F” was developed at any of the study intersections.

The *Traffic Impact Analysis Report* (November 2014) calculated peak hour vehicle miles traveled (VMT) and vehicle hours traveled (VHT) for all of the vehicle trips within the project area in 2013 (existing condition), 2019, 2032, and 2040. VMT during the p.m. peak hours was converted to total VMT per day using the industry-standard factor of 10. The traffic data, in conjunction with the EMFAC2014 emission model, were used to calculate the regional CO_2 emissions for the 2013, 2019, 2032, and 2040 conditions. Regional CO_2 emissions are presented in Table 2.24.A with the Pavley Standard. This fuel efficiency emission standard was designed to apply to automobiles and light trucks beginning with the 2009-model year. The net difference between the existing and build scenarios shows that even with the project, GHG emissions are predicted to decrease due mostly to the Pavley I requirements.

Both the future with project and future no build conditions show increases in CO_2 emissions over existing levels, but the Build Alternatives show decreases when compared to the No Build Alternative during the same future years. This is due to both reduced congestion associated with the improvements to the I-15/Railroad Canyon Road interchange and the construction of a new interchange 0.22 mile north of the existing I-15/Franklin Street overcrossing in the City of Lake Elsinore, as well as improvements in vehicle technology. The future Build Alternatives CO_2 emissions are slightly lower than the future No Build Alternative emissions and would not substantially alter the long-term GHG emissions in the region.

Table 2.24.A: Modeled Annual CO_2 Emissions and Vehicle Miles Traveled, by Alternative

Alternative	CO_2 Emissions (metric tons/year)	Annual Vehicle Miles Traveled[1]
Existing/Baseline 2013	87,528	180,207,163
Open to Traffic 2019 (Phase 1)		
No Build (Alternative 1)	87,676	208,008,803
Build Alternative 2	87,134	206,722,474
Build Alternative 3	85,170	202,061,917
Build Alternative 4	87,676	208,008,803
Failure Year 2025 (Alt 4)/2032 (Alts 2 and 3) (Phase 1)		
No Build (Alternative 1)	N/A	N/A
Build Alternative 2 (2032)	80,777	267,606,747
Build Alternative 3 (2032)	78,985	261,667,842
Build Alternative 4 (2025)	83,130	236,932,294
Open to Traffic 2025 (Alt 4)/2032 (Alts 2 and 3) (Phase 2)		
No Build (Alternative 1)	N/A	N/A
Build Alternative 2 (2032)	80,647	267,168,139
Build Alternative 3 (2032)	80,119	265,424,117
Build Alternative 4 (2025)	82,345	234,694,491
20-Year Horizon/Design-Year 2040		
No Build (Alternative 1)	85,797	302,687,406
Build Alternative 2	85,086	300,178,943
Build Alternative 3	84,530	298,216,658
Build Alternative 4	85,086	300,178,943

Source: EMFAC (2014).
[1] Annual vehicle miles traveled (VMT) values derived from Daily VMT values multiplied by 347, per ARB methodology (ARB 2008).
ARB = California Air Resources Board
CO_2 = carbon dioxide
N/A = Not Applicable

While EMFAC has a rigorous scientific foundation and has been vetted through multiple stakeholder reviews, its emission rates are based on tailpipe emission test data. The numbers are estimates of CO_2 emissions and not necessarily the actual CO_2 emissions. The model does not account for factors such as the rate of acceleration and the vehicles' aerodynamics, which would influence CO_2 emissions. To account for CO_2 emissions, ARB's GHG Inventory follows the IPCC guideline by assuming complete fuel combustion, while still using EMFAC data to calculate CH_4 and N_2O emissions. Though EMFAC is currently the best available tool for use in calculating GHG emissions, it is important to note that the CO_2 numbers provided are only useful for a comparison of alternatives.

2.24.4 Construction Emissions

Construction GHG emissions would result from material processing, on-site construction equipment, and traffic delays due to construction. These emissions will be produced at different levels throughout the construction phase; their frequency and occurrence can 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, improved traffic management plans, and changes in materials, the GHG emissions produced during construction can be offset to some degree by longer intervals between maintenance and rehabilitation activities.

During construction of the project, the combustion of fossil-based fuels creates GHGs such as CO_2, CH_4, and N_2O. Using the *Sacramento Metropolitan Air Quality Management District Road*

Construction Emissions Model (the same Roadway Construction Model for the criteria pollutants in Section 2.15 above), the maximum amount of construction-related GHG emissions generated would be approximately 1,811 metric tons of CO_2 equivalent during the total construction period. For Phase 1, the estimated construction duration is approximately 18 months. For Phase 2, the estimated construction duration is approximately 24 months. Annual GHG emissions during construction are estimated to be approximately 517 metric tons of CO_2 equivalent.

As discussed in Section 2.15, idling times would be restricted to 10 minutes in each direction for passenger cars during lane closures and 5 minutes for construction vehicles. Restricting idling times reduces harmful emissions from passenger cars and diesel-powered construction vehicles.

2.24.5 CEQA Conclusion

As discussed above, both the future build alternatives and future no build conditions show increases in CO_2 emissions over the existing levels; however, the future build CO_2 emissions are lower than the future no build emissions. In addition, as discussed above, there are also limitations with EMFAC and with assessing what a given CO_2 emissions increase means for climate change. Therefore, it is Caltrans' determination that in the absence of further regulatory or scientific information related to greenhouse gas emissions and CEQA significance, it is too speculative to make a determination regarding significance of the project's direct impact and its contribution on the cumulative scale to climate change. However, Caltrans is firmly committed to implementing measures to help reduce the potential effects of the project. These measures are outlined in the following section.

2.24.6 Greenhouse Gas Reduction Strategies

2.24.6.1 Statewide Efforts

In an effort to further the vision of California's GHG reduction targets outlined in AB 32 and SB 32, Governor Brown identified key climate change strategy pillars (concepts). These pillars highlight the idea that several major areas of the California economy will need to reduce emissions to meet the 2030 GHG emissions target. These pillars are (1) reducing today's petroleum use in cars and trucks by up to 50 percent; (2) increasing from one-third to 50 percent our electricity derived from renewable sources; (3) doubling the energy efficiency savings achieved at existing buildings and making heating fuels cleaner; (4) reducing the release of methane, black carbon, and other short-lived climate pollutants; (5) managing farm and rangelands, forests, and wetlands so they can store carbon; and (6) periodically updating the State's climate adaptation strategy, *Safeguarding California*. See Figure 2.24.3, below.

The transportation sector is integral to the people and economy of California. To achieve GHG emission reduction goals, it is vital that we build on our past successes in reducing criteria and toxic air pollutants from transportation and goods movement activities. GHG emission reductions will come from cleaner vehicle technologies, lower-carbon fuels, and reduction of vehicle miles traveled. One of Governor Brown's key pillars sets the ambitious goal of reducing today's petroleum use in cars and trucks by up to 50 percent by 2030.

Governor Brown called for support to manage natural and working lands, including forests, rangelands, farms, wetlands, and soils, so they can store carbon. These lands have the ability to remove carbon dioxide from the atmosphere through biological processes, and to then sequester carbon in above- and below-ground matter.

Figure 2.24.3: The Governor's Climate Change Pillars: 2030 Greenhouse Gas Reduction Goals

2.24.6.2 Caltrans Activities

Caltrans continues to be involved on the Governor's Climate Action Team as the ARB works to implement EOs S-3-05 and S-01-07 and help achieve the targets set forth in AB 32. EO B-30-15, issued in April 2015, and SB 32 (2016), set a new interim target to cut GHG emissions to 40 percent below 1990 levels by 2030. The following major initiatives are underway at Caltrans to help meet these targets.

California Transportation Plan (CTP 2040)

The California Transportation Plan (CTP) is a statewide, long-range transportation plan to meet our future mobility needs and reduce GHG emissions. The CTP defines performance-based goals, policies, and strategies to achieve our collective vision for California's future statewide, integrated, multimodal transportation system. It serves as an umbrella document for all of the other statewide transportation planning documents.

SB 391 (Liu 2009) requires the CTP to meet California's climate change goals under AB 32. Accordingly, the CTP 2040 identifies the statewide transportation system needed to achieve maximum feasible GHG emission reductions while meeting the State's transportation needs. While MPOs have primary responsibility for identifying land use patterns to help reduce GHG emissions, CTP 2040 identifies additional strategies in Pricing, Transportation Alternatives, Mode Shift, and Operational Efficiency.

Caltrans Strategic Management Plan

The Strategic Management Plan, released in 2015, creates a performance-based framework to preserve the environment and reduce GHG emissions, among other goals. Specific performance targets in the plan that will help to reduce GHG emissions include:

- Increasing percentage of non-auto mode share
- Reducing VMT per capita
- Reducing Caltrans' internal operational (buildings, facilities, and fuel) GHG emissions

FUNDING AND TECHNICAL ASSISTANCE PROGRAMS

In addition to developing plans and performance targets to reduce GHG emissions, Caltrans also administers several funding and technical assistance programs that have GHG reduction benefits. These include the Bicycle Transportation Program, Safe Routes to School, Transportation Enhancement Funds, and Transit Planning Grants. A more extensive description of these programs can be found in *Caltrans Activities to Address Climate Change* (2013).

Caltrans Director's Policy 30 (DP-30) Climate Change (June 22, 2012) is intended to establish a department policy that will ensure coordinated efforts to incorporate climate change into departmental decisions and activities.

Caltrans Activities to Address Climate Change (April 2013) provides a comprehensive overview of activities undertaken by Caltrans statewide to reduce GHG emissions resulting from agency operations.

2.24.6.3 Project-Level GHG Reduction Strategies

The following measures in Table 2.24.B will also be implemented in the project to reduce GHG emissions and potential climate change impacts from the project.

1) Landscaping reduces surface warming, and through photosynthesis, decreases CO_2. Landscaping would be provided where necessary within the corridor to provide aesthetic treatment, replacement planting, or mitigation planting for the project. The landscape planting would help offset potential CO_2 emissions increase.
2) The project would incorporate the use of energy-efficient lighting, such as light-emitting diode (LED) traffic signals, to the extent feasible. LED bulbs—or balls, in the stoplight vernacular—cost $60 to $70 apiece but last 5 to 6 years, compared to the 1-year average lifespan of the incandescent bulbs previously used. The LED balls themselves consume 10 percent of the electricity of traditional lights, which will also help reduce the project's CO_2 emissions.

3) According to Caltrans Standard Specifications and Provisions, idling time for lane closure during construction is restricted to 10 minutes in each direction. In addition, the contractor must comply with Title 13, California Code of Regulations §2449(d)(3), which was adopted by ARB on June 15, 2008. This regulation restricts idling of construction vehicles to no longer than 5 consecutive minutes. Compliance with this regulation reduces harmful emissions from diesel-powered construction vehicles.

2.24.7 Adaptation Strategies

"Adaptation strategies" refer to how Caltrans and others can plan for the effects of climate change on the state's transportation infrastructure and strengthen or protect the facilities from damage—or, put another way, planning and design for resilience. Climate change is expected to produce increased variability in precipitation, rising temperatures, rising sea levels, variability in storm surges and their intensity, and the frequency and intensity of wildfires. These changes may affect the transportation infrastructure in various ways, such as damage to roadbeds from longer periods of intense heat; increasing storm damage from flooding and erosion; and inundation from rising sea levels. These effects will vary by location and may, in the most extreme cases, require that a facility be relocated or redesigned. These types of impacts to the transportation infrastructure may also have economic and strategic ramifications.

2.24.7.1 Federal Efforts

At the federal level, the Climate Change Adaptation Task Force, co-chaired by the CEQ, the Office of Science and Technology Policy (OSTP), and the National Oceanic and Atmospheric Administration (NOAA), released its interagency task force progress report on October 28, 2011,[1] outlining the federal government's progress in expanding and strengthening the nation's capacity to better understand, prepare for, and respond to extreme events and other climate change impacts. The report provided an update on actions in key areas of federal adaptation, including: building resilience in local communities, safeguarding critical natural resources such as fresh water, and providing accessible climate information and tools to help decision-makers manage climate risks.

The federal Department of Transportation issued *U.S. DOT Policy Statement on Climate Adaptation* in June 2011, committing to "integrate consideration of climate change impacts and adaptation into the planning, operations, policies, and programs of DOT in order to ensure that taxpayer resources are invested wisely and that transportation infrastructure, services and operations remain effective in current and future climate conditions."[2]

To further the DOT Policy Statement, in December 15, 2014, FHWA issued order 5520 (*Transportation System Preparedness and Resilience to Climate Change and Extreme Weather Events*).[3] This directive established FHWA policy to strive to identify the risks of climate change and extreme weather events to current and planned transportation systems. The FHWA will work to integrate consideration of these risks into its planning, operations, policies, and programs in order to promote preparedness and resilience; safeguard federal investments; and ensure the safety, reliability, and sustainability of the nation's transportation systems.

FHWA has developed guidance and tools for transportation planning that fosters resilience to climate effects and sustainability at the federal, state, and local levels.[4]

2.24.7.2 State Efforts

On November 14, 2008, then-Governor Arnold Schwarzenegger signed EO S-13-08, which directed a number of state agencies to address California's vulnerability to sea-level rise caused by climate change. This EO set in motion several agencies and actions to address the concern of sea-level rise and directed all state agencies planning to construct projects in areas vulnerable to future sea-level rise to consider a range of sea-level rise scenarios for the years 2050 and 2100, assess project vulnerability and, to the extent feasible, reduce expected risks and increase resiliency to sea-level rise. Sea-level rise estimates should also be used in conjunction with information on local uplift and subsidence, coastal erosion rates, predicted higher high water levels, and storm surge and storm wave data.

Governor Schwarzenegger also requested the National Academy of Sciences to prepare an assessment report to recommend how California should plan for future sea-level rise. The final report, *Sea-Level Rise for the Coasts of California, Oregon, and Washington* (Sea-Level Rise

1 Obama White House. Website: https://obamawhitehouse.archives.gov/administration/eop/ceq/initiatives/resilience.
2 FHWA. Website: https://www.fhwa.dot.gov/environment/sustainability/resilience/policyand_guidance/usdot.cfm.
3 FHWA. Order 5520. Website: https://www.fhwa.dot.gov/legsregs/directives/orders/5520.cfm.
4 FHWA. Sustainability. Website: https://www.fhwa.dot.gov/environment/sustainability/resilience/ .

Assessment Report)[1] was released in June 2012 and included relative sea-level rise projections for the three states, taking into account coastal erosion rates, tidal impacts, El Niño and La Niña events, storm surge, and land subsidence rates; and the range of uncertainty in selected sea-level rise projections. It provided a synthesis of existing information on projected sea-level rise impacts to State infrastructure (such as roads, public facilities, and beaches), natural areas, and coastal and marine ecosystems; and a discussion of future research needs regarding sea-level rise.

In response to EO S-13-08, the California Natural Resources Agency (Resources Agency), in coordination with local, regional, State, federal, and public and private entities, developed *The California Climate Adaptation Strategy* (December 2009),[2] which summarized the best available science on climate change impacts to California, assessed California's vulnerability to the identified impacts, and outlined solutions that can be implemented within and across State agencies to promote resiliency. The adaptation strategy was updated and rebranded in 2014 as *Safeguarding California: Reducing Climate Risk* (Safeguarding California Plan).

Governor Jerry Brown enhanced the overall adaptation planning effort by signing EO B-30-15 in April 2015, requiring State agencies to factor climate change into all planning and investment decisions. In March 2016, sector-specific Implementation Action Plans that demonstrate how State agencies are implementing EO B-30-15 were added to the Safeguarding California Plan. This effort represents a multi-agency, cross-sector approach to addressing adaptation to climate change-related events statewide.

EO S-13-08 also gave rise to the *State of California Sea-Level Rise Interim Guidance Document* (SLR Guidance), produced by the Coastal and Ocean Working Group of the California Climate Action Team (CO-CAT), of which Caltrans is a member. First published in 2010, the document provided "guidance for incorporating sea-level rise (SLR) projections into planning and decision making for projects in California," specifically, "information and recommendations to enhance consistency across agencies in their development of approaches to SLR." The March 2013 update[3] finalizes the SLR Guidance by incorporating findings of the National Academy's 2012 final Sea-Level Rise Assessment Report; the policy recommendations remain the same as those in the 2010 interim SLR Guidance. The guidance will be updated as necessary in the future to reflect the latest scientific understanding of how the climate is changing and how this change may affect the rates of SLR.

Climate change adaptation for transportation infrastructure involves long-term planning and risk management to address vulnerabilities in the transportation system from increased precipitation, and flooding; the increased frequency and intensity of storms and wildfires; rising temperatures; and rising sea levels. Caltrans is actively engaged in working towards identifying these risks throughout the State and will work to incorporate this information into all planning and investment decisions as directed in EO B-30-15.

The project is outside the Coastal Zone and is not in an area subject to sea-level rise. Accordingly direct impacts to transportation facilities due to projected sea level rise are not expected.

---

1 National Academies Press. 2012. *Sea Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future* (2012). Website: http://www.nap.edu/catalog.php?record_id=13389.

2 State of California. California Climate Adaption Strategy. Website: http://www.climatechange.ca.gov/adaptation/strategy/index.htm.l

3 State of California. Ocean Protection Council. Website: http://www.opc.ca.gov/2013/04/update-to-the-sea-level-rise-guidance-document/.