

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

This chapter explains the impacts that the project would have on the human, physical, and biological environments in the project area. It describes the existing environment that could be affected by the project; the potential impacts from each of the alternatives; and the proposed avoidance, minimization, and/or mitigation measures. Any indirect impacts are included in the general impacts analysis and discussions that follow.

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

- ***Coastal Zone.*** The project is not within a coastal zone and is not within the jurisdiction of the California Coastal Commission. Kern County is an inland county and is not along the coast.
- ***Wild and Scenic Rivers.*** No designated wild and scenic rivers are in the project area.
- ***Parks.*** No parks or recreational facilities sit next to the roadway, and no parks or recreational facilities would be affected by the project (*Community Impact Assessment*, June 2011).
- ***Farmlands/Timberlands.*** There is no prime or other important farmland immediately adjacent to the project alignment. The project is in an urban area. There are no timberlands within the project study area (*Community Impact Assessment*, June 2011).
- ***Hydrology and Floodplain.*** The project does not lie in the 100-year floodplain (Federal Emergency Management Agency's Flood Insurance Rate Map, September 26, 2008).
- ***Water Quality and Storm Water Runoff.*** Storm water would be accommodated by the existing storm drain system, which is directed via drainage inlets to retention basins. Runoff that reaches these basins would infiltrate into the soil and would not directly discharge into a body of water. Therefore, there are no

receiving water bodies for this project. The basins are maintained consistent with existing regulations for water quality. Also, there are no resources within the study area on the Central Valley Regional Water Quality Control Board's 2006 Section 303(d) list of impaired water bodies (a list of those water bodies that do not meet water quality standards).

- ***Geology/Soils/Seismic/Topography.*** The project limits are not within a Special Studies Zone for a fault rupture hazard. The closest significant fault in the project area is about 5 miles from the project alignment. The project site has a low potential for liquefaction. (Liquefaction is a term used when the soil behaves like a liquid during an earthquake.) The project would not be subject to potential landslide impacts since the project site is flat (*Geotechnical Design/Materials Report, Rosedale Highway State Route 58 Widening Improvements, Bakersfield, California* 2008).
- ***Paleontology.*** The California State University, Fresno, Department of Geology Paleontological Sensitivity Mapping Project database lists the geology of the project study area as having low sensitivity for paleontological resources (fossils). The roadway widening would only disturb the top five feet of soil which, given the disturbed nature of the area, would not be expected to contain fossils. The grade separation would employ pile driving for the bridge supports (*Updated Paleontological Identification Report, October 2011*).
- ***Biological Environment—Plant Species.*** Based on focused surveys done in 2008 and 2009, no special-status plant species are expected to occur in the Biological Study Area (*Natural Environment Study, March 2011*).

2.1 Human Environment

2.1.1 Land Use

The information in this section is based on the *Community Impact Assessment* (June 2011) prepared for the project.

2.1.1.1 Existing and Future Land Use

Affected Environment

The project study area for land use encompasses the census tracts that include the project. This study area is within the planning area of the *Metropolitan Bakersfield General Plan*. The western edge of the study area is also in the *Western Rosedale Specific Plan*.

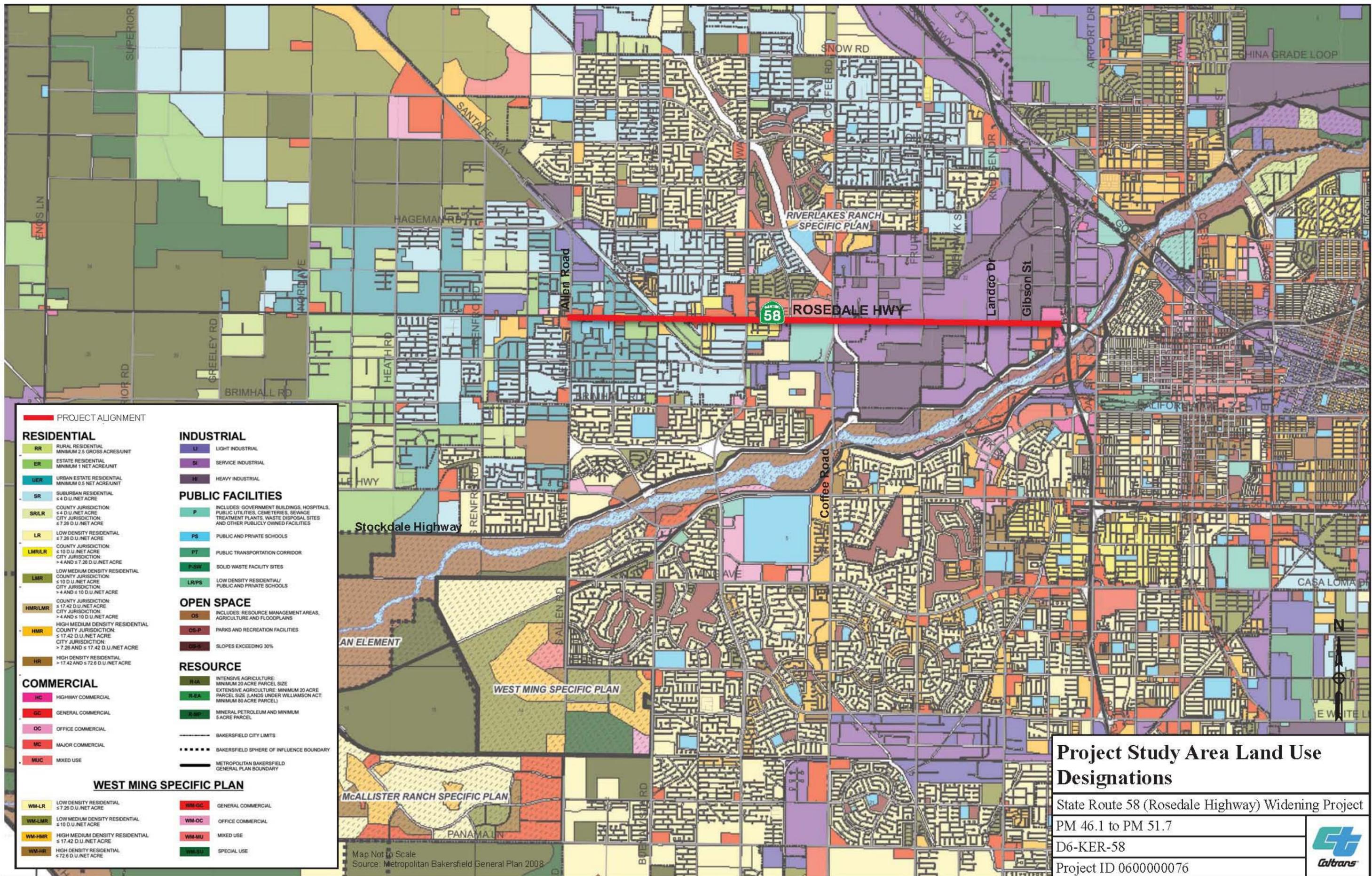
As shown in Figure 2-1, Project Study Area Land Use Designations, the land uses in the project study area are commercial, industrial, open space, public facilities, and residential. The western end of the study area is mostly residential with a mix of commercial. Most of the land uses include industrial, resource, and commercial land from Calloway Drive to State Route 99. Table 2.1 lists these land uses and their acreages in the project study area. Figure 2-2 shows the existing county zoning, and Figure 2-3 shows the existing city zoning in the project study area.

Table 2.1 Primary Land Use Categories Within the Project Study Area

Land Use Category	Land Use (acres)	Percentage ^a
Commercial	631	6
Industrial	3,521	36
Residential	4,589	46
Residential – Mixed Use	209	2
Public Facilities	417	4
Parks and Recreation Facilities	179	2
Open Space	294	3
Other Jurisdiction	12	0 ^b
Resource – Intensive Agriculture	29	0 ^b
Resource – Mineral Petroleum	14	0 ^b
Total	9,895	99
^a Numbers have been rounded to nearest single digit. Due to rounding, the total does not add up to 100 percent. ^b Less than 0.5 percent. Source: <i>Community Impact Assessment</i> 2011.		

Metropolitan Bakersfield, as well as the project study area, has experienced substantial growth over the past decade. This trend is expected to continue into the foreseeable future, with the population of the City of Bakersfield projected to increase by 69 percent between 2000 and 2020. The Metropolitan Bakersfield General Plan provides a land uses mix to meet this future demand.

Given the generally urban nature of the area, future development immediately adjacent to State Route 58 in the study area is expected to be smaller infill development. This area is zoned for commercial and industrial uses. There are limited opportunities for large-scale new residential development right next to the roadway, with most residential land use designations occurring west of the project limits or north and south of the roadway. Large-scale projects (Bakersfield Commons and Stockdale Ranch) have been approved south of project study area.



PROJECT ALIGNMENT	
RESIDENTIAL	
RR	RURAL RESIDENTIAL MINIMUM 2.5 GROSS ACRES/UNIT
ER	ESTATE RESIDENTIAL MINIMUM 1 NET ACRE/UNIT
UER	URBAN ESTATE RESIDENTIAL MINIMUM 0.5 NET ACRE/UNIT
SR	SUBURBAN RESIDENTIAL ≤ 4 D.U./NET ACRE
SR/LR	COUNTY JURISDICTION: ≤ 4 D.U./NET ACRE CITY JURISDICTION: ≤ 7.26 D.U./NET ACRE
LR	LOW DENSITY RESIDENTIAL ≤ 7.26 D.U./NET ACRE
LMR/LR	COUNTY JURISDICTION: ≤ 10 D.U./NET ACRE CITY JURISDICTION: > 4 AND ≤ 7.26 D.U./NET ACRE
LMR	LOW MEDIUM DENSITY RESIDENTIAL CITY JURISDICTION: ≤ 10 D.U./NET ACRE CITY JURISDICTION: > 4 AND ≤ 10 D.U./NET ACRE
HMR/LMR	COUNTY JURISDICTION: ≤ 17.42 D.U./NET ACRE CITY JURISDICTION: > 4 AND ≤ 10 D.U./NET ACRE
HMR	HIGH MEDIUM DENSITY RESIDENTIAL CITY JURISDICTION: ≤ 17.42 D.U./NET ACRE CITY JURISDICTION: > 7.26 AND ≤ 17.42 D.U./NET ACRE
HR	HIGH DENSITY RESIDENTIAL > 17.42 AND ≤ 72.6 D.U./NET ACRE
COMMERCIAL	
HC	HIGHWAY COMMERCIAL
GC	GENERAL COMMERCIAL
OC	OFFICE COMMERCIAL
MC	MAJOR COMMERCIAL
MUC	MIXED USE
WEST MING SPECIFIC PLAN	
WM-LR	LOW DENSITY RESIDENTIAL ≤ 7.26 D.U./NET ACRE
WM-LMR	LOW MEDIUM DENSITY RESIDENTIAL ≤ 10 D.U./NET ACRE
WM-HMR	HIGH MEDIUM DENSITY RESIDENTIAL ≤ 17.42 D.U./NET ACRE
WM-HR	HIGH DENSITY RESIDENTIAL ≤ 72.6 D.U./NET ACRE
WM-GC	GENERAL COMMERCIAL
WM-OC	OFFICE COMMERCIAL
WM-MU	MIXED USE
WM-SU	SPECIAL USE
INDUSTRIAL	
LI	LIGHT INDUSTRIAL
SI	SERVICE INDUSTRIAL
HI	HEAVY INDUSTRIAL
PUBLIC FACILITIES	
P	INCLUDES: GOVERNMENT BUILDINGS, HOSPITALS, PUBLIC UTILITIES, CEMETERIES, SEWAGE TREATMENT PLANTS, WASTE DISPOSAL SITES AND OTHER PUBLICLY OWNED FACILITIES
PS	PUBLIC AND PRIVATE SCHOOLS
PT	PUBLIC TRANSPORTATION CORRIDOR
P-SW	SOLID WASTE FACILITY SITES
LR/PS	LOW DENSITY RESIDENTIAL/ PUBLIC AND PRIVATE SCHOOLS
OPEN SPACE	
OS	INCLUDES: RESOURCE MANAGEMENT AREAS, AGRICULTURE AND FLOODPLAINS
OS-P	PARKS AND RECREATION FACILITIES
OS-S	SLOPES EXCEEDING 30%
RESOURCE	
R-IA	INTENSIVE AGRICULTURE: MINIMUM 20 ACRE PARCEL SIZE
R-EA	EXTENSIVE AGRICULTURE: MINIMUM 20 ACRE PARCEL SIZE (LANDS UNDER WILLIAMSON ACT, MINIMUM 80 ACRE PARCEL)
R-MP	MINERAL PETROLEUM AND MINIMUM 5 ACRE PARCEL
- - - - - BAKERSFIELD CITY LIMITS	
- - - - - BAKERSFIELD SPHERE OF INFLUENCE BOUNDARY	
- - - - - METROPOLITAN BAKERSFIELD GENERAL PLAN BOUNDARY	

Map Not to Scale
Source: Metropolitan Bakersfield General Plan 2008

Project Study Area Land Use Designations

State Route 58 (Rosedale Highway) Widening Project
PM 46.1 to PM 51.7
D6-KER-58
Project ID 0600000076



Figure 2-1

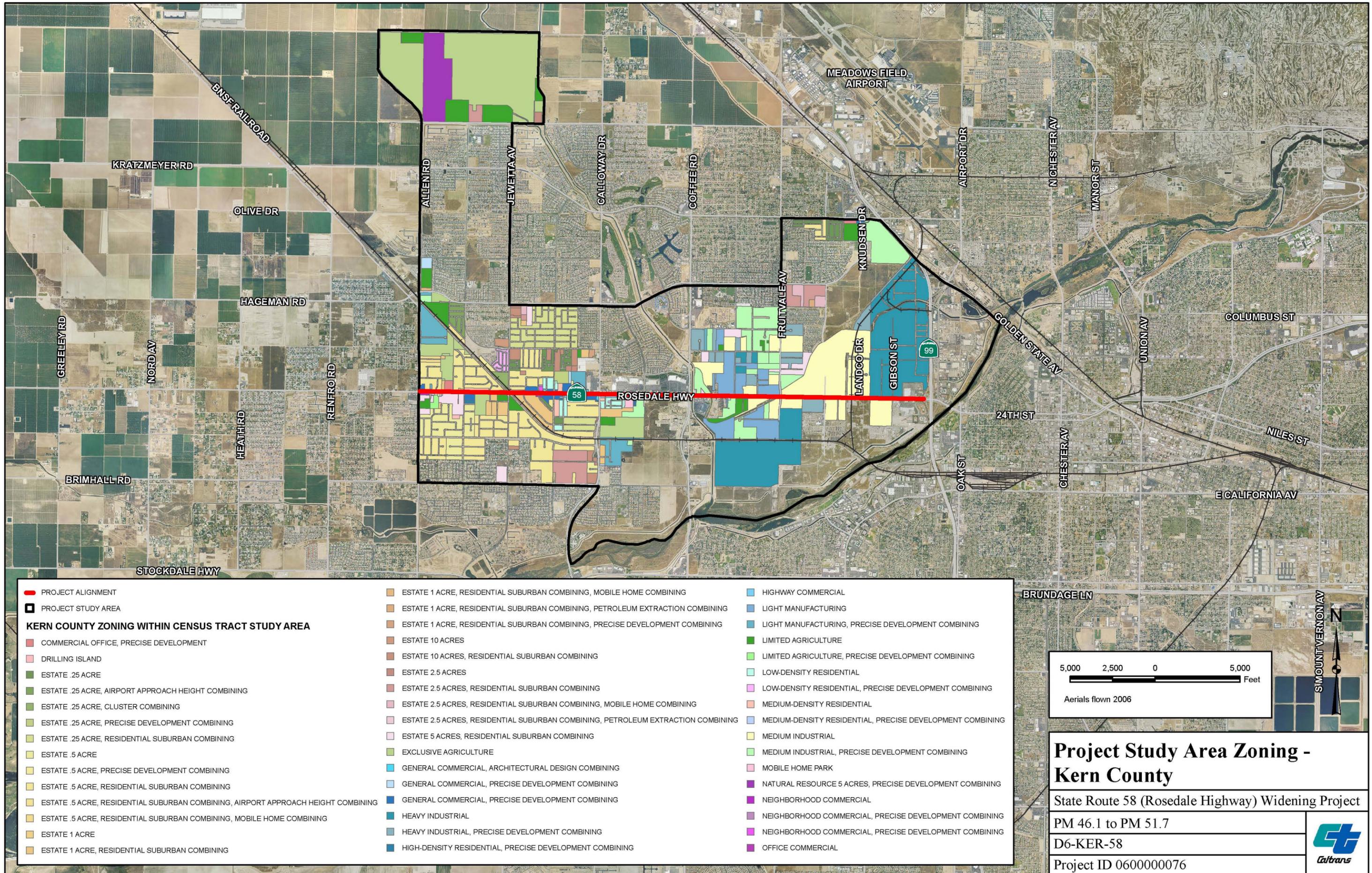


Figure 2-2

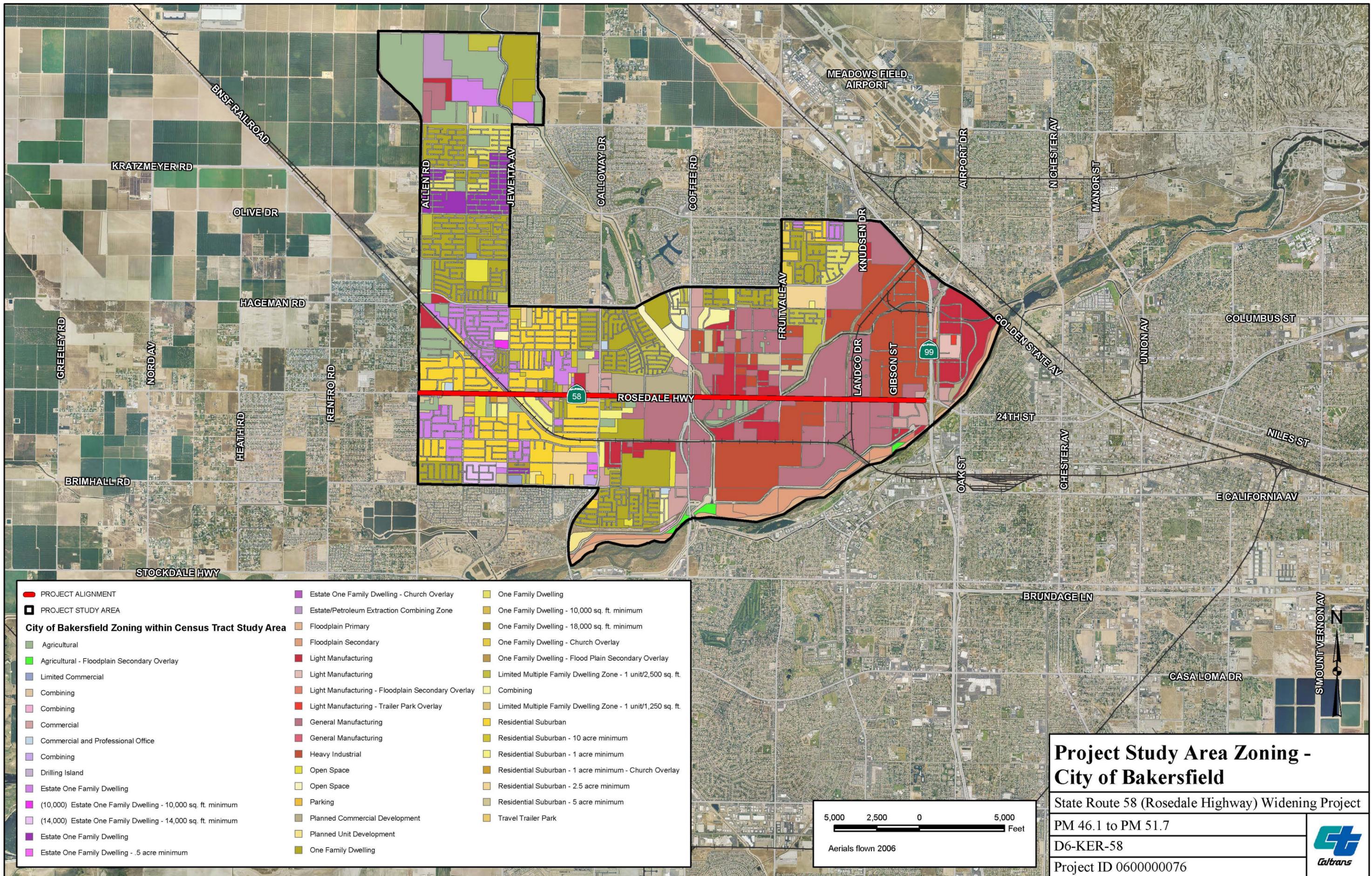


Figure 2-3

Several large-scale projects have recently been approved by the City of Bakersfield in the area surrounding the project (see Table 2.2). Though Saco Ranch and Stockdale Ranch are outside the defined project study area, these future land uses will further define this portion of Bakersfield as part of the growing urban core by expanding the large-scale commercial and office development.

Table 2.2 Projects/Development Within the Project Study Area

Name	Jurisdiction	Proposed Uses	Status
Lone Oaks Estates	County	Single-family dwelling units	Existing use
Northwest Promenade	City	Big Box retailers with restaurants and specialty stores	Existing use
Rosedale Arms Apartments	County	Multiple units	Existing use
Alon USA Energy	County	Industrial operations on 650 acres	Existing use
Bakersfield Commons	City	1,400,000 square feet of retail commercial; 600,000 square feet of office commercial; 345 multi-family homes; and 80 single-family homes	General Plan and zoning approved. Project will allow the redevelopment of the 255-acre site east and west of Coffee Road between Brimhall Road and State Route 58. Development will be phased, with construction expected to be completed by 2035.
Saco Ranch Commercial Center	City	1,459,500 square feet of retail commercial, 332,000 square feet of office uses, and 1,376,496 square feet of industrial uses	An amendment to the Metropolitan Bakersfield General Plan Land Use Element allows for annexation of the project site into the City of Bakersfield's boundaries. It sits on 323 total acres and is generally located southeast and southwest of the intersection of Coffee Road and 7 th Standard Road, west of the Union Pacific Railroad tracks.
Stockdale Ranch	City	3,583 residential units, and approximately 941,700 square feet of commercial/business park uses; 20 acres are provided for open space-park use	Approved General Plan amendment and zone change. The project assumes annexation of the project site into the City of Bakersfield. Located on the south side of Stockdale Highway near Heath Road.

Community Facilities and Services

As shown on Figure 2-4, Key Community Features, the project study area includes multiple community facilities, including schools, churches, treatment facilities, a hospital, and libraries. Utility services are discussed later in the document in Section 2.1.4.

Commute Patterns

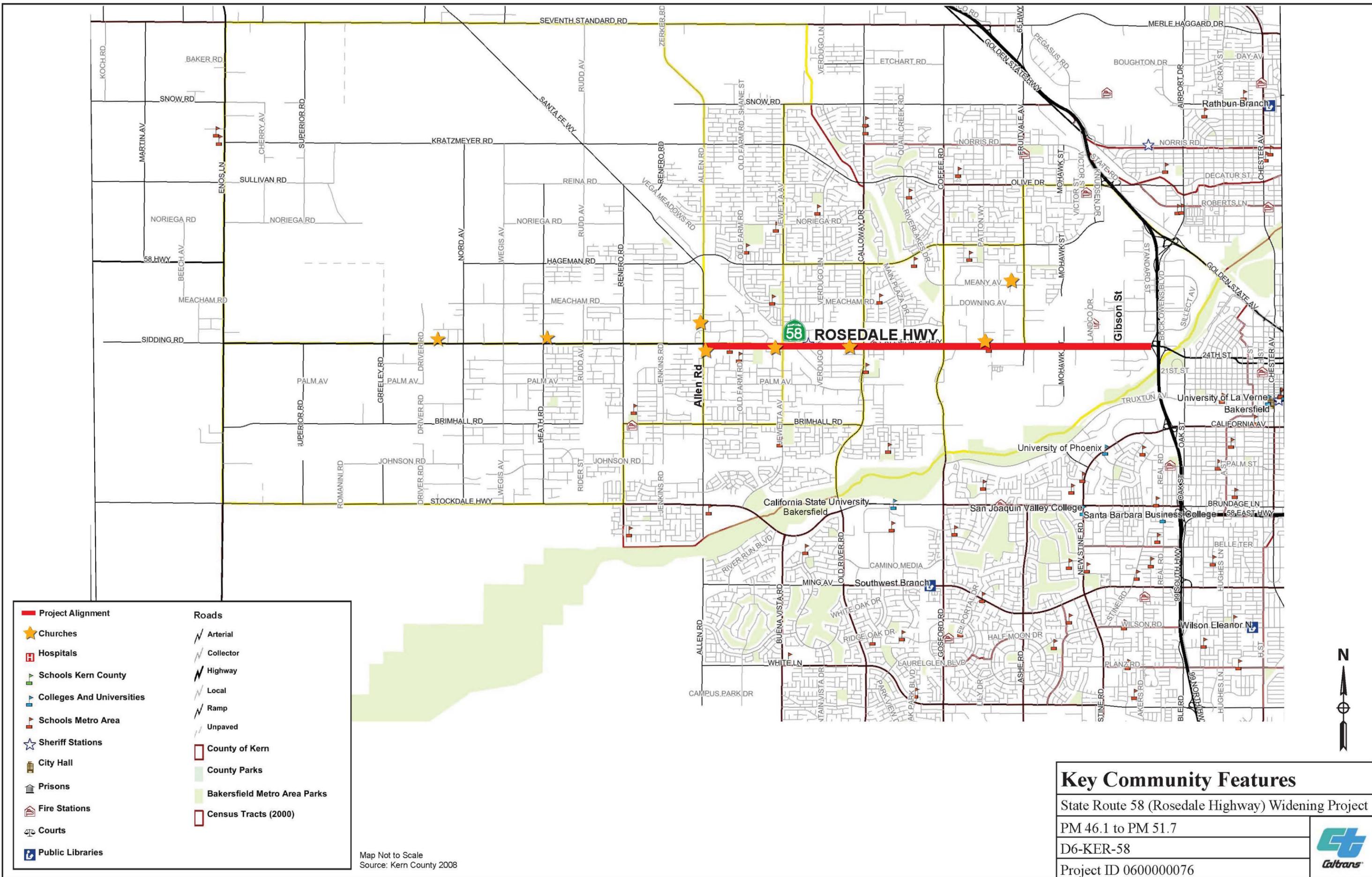
The City of Bakersfield is served by State Route 99 and Interstate 5, which run north to south and provide access from both the Los Angeles and Fresno areas. State Route 58 serves as a major route from residential neighborhoods to employment and commercial centers in Bakersfield.

Housing

The City of Bakersfield is the largest population center in Kern County. The study area is in the heart of the metropolitan Bakersfield area and has about 9 percent of the housing units in the City of Bakersfield and about 3 percent of the housing units in Kern County.

The *City of Bakersfield General Plan's* Housing Element notes that 27,252 new housing units are needed to serve the projected increase in population between 2006 and 2013 (City of Bakersfield General Plan Housing Element 2008).

As noted earlier, Table 2.2 lists development projects in the study area.



Key Community Features	
State Route 58 (Rosedale Highway) Widening Project	
PM 46.1 to PM 51.7	
D6-KER-58	
Project ID 060000076	

Map Not to Scale
Source: Kern County 2008

Figure 2-4

Environmental Consequences

Build Alternative (Preferred Alternative)

Land Uses

The Build Alternative (Preferred Alternative) would require the purchase of property and structures that sit within the proposed right-of-way along State Route 58. A “partial acquisition” means that a small portion of a parcel is purchased but the existing use remains. Table 2.3 lists the land use impacts.

Table 2.3 Land Uses Affected by the Build Alternative (Preferred Alternative)

Land Use	Number of Full Acquisitions	Partial Acquisitions (P+)	Partial Acquisitions (P)	Impact Area (square feet)	Impact Area (acre)	Conflict With On-site Improvements
Land Uses Affected by Roadway Widening						
Church	0	0	1	39	<0.001	
School			1	261	<0.006	Modification to curb cut
Utility	0	0	1	78	<0.002	
Commercial	0	26	27	66,125	1.518	Parking and signs
Residential	0	0	8	1,867	<0.043	
Industrial	0	0	2	3,144	0.072	
Railroad ^a	0	0	1	1,900	0.044	Utility easement
<i>Total for Roadway Widening</i>	0	26	41	73,414	1.685	
Land Uses Affected by the Grade Separation						
Industrial/Commercial	8	0	5	417,333	9.581	Oil well access and 9 structures
Industrial/Residential	1	0	0	69,491	1.595	5 structures, including a residential use
Railroad ^a	0	0	1	2,529	0.058	Easement
<i>Total for Grade Separation</i>	9	0	6	489,353	11.234	
Total for Build Alternative	9	26	47	562,744	12.919	
<p>P+: Locations of partial acquisitions where compensation would also be provided for the loss of improvements (typically associated with loss of parking or signage), as well as right-of-way. The amount would be determined as part of the appraisal process. Two of the P+ parcels do not involve actual right-of-way acquisition but would have compensation due to sign relocation or loss of parking associated with driveway changes.</p> <p>^a No property acquisition is required; however, road widening would require a roadway easement and the grade separation would require an aerial easement. Note: Impacts to the railroad right-of-way would be minor and would not affect the function or use of this parcel.</p> <p>Source: <i>Community Impact Assessment</i> 2011.</p>						

Though this alternative would require the purchase of right-of-way, it would not physically divide the community. It would not change land use patterns or long-range development plans. The general plans for the local jurisdictions have assumed that this roadway would be widened. The Build Alternative (Preferred Alternative) would be compatible with the surrounding uses because the function of the roadway would not change. The following are the types of impacts that would occur with the Build Alternative (Preferred Alternative):

- **Residential.** Though the Build Alternative (Preferred Alternative) would have a direct impact on eight residentially zoned parcels, it would not result in incompatibilities with residentially zoned property. The grade separation would result in the full acquisition of one parcel zoned industrial that contains a residence. As a result, this one residence would be displaced. The acquisition of the parcel and resulting displacement of the residential use is discussed further in Section 2.1.3.2 Relocations and Property Acquisition.

Kern County and City of Bakersfield zoning requirements identify minimum building setback requirements from the roadway for each zoning classification. For single-family residential uses, the minimum front yard setback requirement is generally 25 feet. There are locations along the roadway where the existing structure would not meet the minimum 25-foot setback requirement once the roadway is widened; however, it does not appear that the viability of any of these uses would be affected. In instances like this, a variance would need to be issued by the local jurisdiction (either county or city, as applicable) to allow the continuation of a non-conforming use. Once the variance is issued, there would not be a conflict with the zoning requirements.

- **Commercial/Industrial.** The Build Alternative (Preferred Alternative) would have a direct impact on 69 parcels with industrial and commercial uses. Of the 69 affected industrial/commercial parcels, 58 of these parcels would be partial acquisitions and nine parcels would be full acquisitions. For the remaining two parcels, there would be no property acquisitions required. Signage and landscaping in the state right-of-way would be removed. All of the full acquisitions would be associated with the construction of the grade separation. These would be acquired closer to the 2025 start of construction. Further

discussion of the relocations related to the full acquisitions is provided in Section 2.1.3.2.

Construction of an overcrossing would have the potential to sever access to the adjacent land use parcels. Therefore, these parcels would need to be acquired. However, the roadway design under consideration has been developed to minimize this potential impact. Once the grade separation is constructed, the residual area can be reconfigured and sold, and replacement uses can be constructed. Of the nine full parcel acquisitions, one parcel is vacant. Fourteen structures sit on the parcels identified for full acquisition. Of these 14, nine structures currently contain operating businesses; three structures are currently unoccupied buildings; one structure's use is unknown; and one structure is a residential unit. Another parcel identified for full acquisition (332-270-03) contains an oil well. The parcel with the residence (332-270-02) also contains several of the commercial uses and appears to be a non-conforming use.

- **Other Land Uses.** The Build Alternative (Preferred Alternative) would result in the minor acquisition of parcels with other uses. These parcels contain church uses, utilities, school, uses, and the railroad. The purchases would all be minor acquisitions that would not affect the function or use of the parcels.

In addition to the minor property acquisitions, median closures to facilitate traffic movement would be required. As a result, turning movements would be restricted. For all locations where the median is subject to closure, the longest distance to the nearest intersections that would allow U-turns is approximately 2,250 feet (Wedding Lane to Fruitvale Avenue to the east). Because this distance is minimal (0.43 mile) and because each parcel would continue to have access to State Route 58, these median closures are not expected to substantially erode the client base for commercial uses or require changes to school service area. However, it should be noted that longer out of direction travel may be required for trucks that are unable to do U-turns at the intersections.

Access to Rosedale Middle School would be changed. The school currently has two driveway entrances off of State Route 58. Left-turn lanes are provided on State Route 58 to allow access from either the west or east at both entrances. Only right-turn exits are allowed from the eastern access point. With the project, the existing westbound turn lane at the eastern median opening would remain open, but there would be a full median closure at the western median opening. The proposed full median would

require westbound motorists to drive to the next intersection (Allen Road) and make a U-turn to access the school, a distance of about a quarter-mile. Though this may be seen as inconvenience, no property acquisition or land use conflict would result.

See Appendix K for detailed information on direct property impacts by parcel for the Build Alternative (Preferred Alternative).

No-Build Alternative

The No-Build Alternative would not result in any direct land use impacts, and no new right-of-way would be needed. The widening of State Route 58 has been assumed in the local and regional planning programs because the additional road capacity is needed to serve the planned growth in the area. Without the project, the roadway widening would be done in small pieces as new development is built. The roadway widening would likely be a condition of approval for new development. This would result in inconsistent widening throughout the project study area. Improvements may be implemented along the undeveloped areas, but the widening would not happen where the roadway extends through areas that have already been developed.

Avoidance, Minimization, and/or Mitigation Measures

The Build Alternative (Preferred Alternative) has incorporated avoidance and minimization measures in the project design through the use of design exceptions to reduce the amount of right-of-way required for project implementation. In addition, Caltrans, the City and the County have standard conditions that get implemented for all projects. These measures would serve to reduce impacts. Standard conditions are measures that would apply to all projects to help avoid or minimize impacts. For land use, this would include compensating property owners with the fair market value of the property as well as damages, if private property is required for the roadway (this is discussed further in Section 2.1.3.2, Relocations and Real Property Acquisition).

The additional measures listed below would be applied to this project to minimize potential land use impacts.

Minimization Measures

- LU-1 During project design, the City shall coordinate with the land owners on the processing of a variance to allow a reduced building setback at those locations where zoning setback requirements will not be met.

- LU-2 During project design, the City shall evaluate the feasibility of constructing additional parking on-site or restriping parking lots to minimize the loss of

parking at those locations where impacts to parking have been identified. Should the loss of parking result in less parking than what is required by the applicable zoning code, the City or County shall coordinate with the property owners on the issuance of a variance.

2.1.1.2 Consistency with State, Regional, and Local Plans

Affected Environment

Transportation Concept Route – State Route 58

The *Transportation Concept Route – State Route 58* is a long-range planning document prepared by Caltrans that describes the current condition of the highway and establishes a 20-year planning horizon. In December 2004, Caltrans District 6 prepared a *Transportation Concept Route* for the 143.9-mile segment of State Route 58 within Kern County. The *Transportation Concept Route* divides the corridor into 22 different segments. The project is located in Segment 8.

Regional Transportation Plan

The Kern Council of Governments is an association of city and county governments that was created to address regional issues within Kern County. The Regional Transportation Plan is a long-term (20-year) plan for the Kern County transportation network that includes all types of travel and freight movement. The Regional Transportation Plan establishes the projects needed to improve Kern County's transportation system through 2035 in order to meet federal air quality conformity requirements.

Regional Transportation Improvement Program

The Regional Transportation Improvement Program includes the projects that the local agencies in Kern County want to implement in the next five years. A project must be included in the program to be funded.

Metropolitan Bakersfield General Plan

The entire project study area is within the planning area of the *Metropolitan Bakersfield General Plan*. The plan serves as a guide for the future growth of about 408 square miles of city and county lands. The *Metropolitan Bakersfield General Plan* contains goals, policies, mitigation measures, and implementation actions that are used when development projects are proposed.

Western Rosedale Specific Plan

The *Western Rosedale Specific Plan* area extends from State Route 43 to Jewetta Road and north of 7th Standard Road to south of Stockdale Highway. The *Western Rosedale Specific Plan* is consistent with provisions of the *Metropolitan Bakersfield General Plan* except that the *Metropolitan Bakersfield General Plan* and the *Kern County General Plan* have no special provision for half-acre lots with residential uses and large animals.

Metropolitan Bakersfield Habitat Conservation Plan

The project is within the limits of the Metropolitan Bakersfield Habitat Conservation Plan. Analysis of consistency of the project with the Metropolitan Bakersfield Habitat Conservation Plan is provided in the Section 2.3, Biological Environment, of this document.

Environmental Consequences

As discussed above, a number of land use-related planning programs apply to the project. Table 2.4 identifies the applicable policies from these programs and provides a consistency evaluation for both the Build Alternative (Preferred Alternative) and the No-Build Alternative for each of these programs. The Build Alternative (Preferred Alternative) is consistent with the various plans because widening the roadway has been assumed as part of the local and regional planning programs. Because widening State Route 58 has been assumed to accommodate existing and planned development, it would not have adverse indirect impacts on the community or conflict with the long-term vision for the metropolitan Bakersfield area. As discussed in Section 2.1.2, Growth, the project would help to support the planned growth.

Table 2.4 Consistency with State, Regional, and Local Plans and Programs

Policy	Build Alternative (Preferred Alternative)	No-Build Alternative
Regional Transportation Plan		
<i>Policy 8: Investigate new federal, state and local funding opportunities to maintain the current transportation system and promote future transportation development.</i>	Consistent Federal funds would be used to widen an important arterial in the transportation system.	Not Consistent This would not use the federal funds that have been allocated by the SAFETEA-LU bill.

Policy	Build Alternative (Preferred Alternative)	No-Build Alternative
<i>Policy 23: Coordinate planning efforts to ensure efficient, economical and environmentally sound movement of goods.</i>	Consistent Improving the traffic level of service would enhance goods movement by reducing travel times and result in less air pollution.	Not Consistent Without the improvements over time, travel time would be increased. Decreased speeds increase many air pollutants (discussed later in the document).
<i>Policy 27: Maintain existing roadway infrastructure and provide for its efficient use.</i>	Consistent Improving State Route 58 provides better use of the existing roadway system and results in more efficient traffic movement.	Not Consistent Without the improvements over time, travel time would increase, which would reduce the effectiveness of the current transportation system.
Regional Transportation Improvement Program		
<i>The Regional Transportation Improvement Program supports maintaining the open to traffic dates of regionally significant projects, which are programmed (funded) over the next five years.</i>	Consistent The roadway widening is included in the Regional Transportation Improvement Program. Building the project would be consistent with the planning program to have the project open to traffic by 2015.	Not Consistent This alternative would not build the roadway improvement that has been identified as regionally important. The open-to-traffic date would not be met.
Metropolitan Bakersfield General Plan		
Land Use		
<i>Policy 55: Provide for the mitigation of significant noise impacts on adjacent sensitive uses from transportation corridor improvements.</i>	Consistent The project recommends construction of two noise barriers that would protect sensitive uses from roadway noise.	Not Consistent No noise barriers would be built with the No-Build Alternative, and the sensitive uses would continue to be exposed to high noise levels.

Policy	Build Alternative (Preferred Alternative)	No-Build Alternative
Circulation Element		
<p><i>Goal 1: Provide a safe and efficient street system that links all parts of the area for movement of people and goods.</i></p>	<p>Consistent State Route 58 serves as an important connection between residential and commercial areas. The project would improve the street system by providing more roadway capacity. The roadway would be built consistent with local design standards.</p>	<p>Not Consistent This alternative would not improve the street system. This would reduce the efficiency of the movement of people and goods.</p>
<p><i>Goal 7: Develop and maintain a circulation system that supports the land use plan shown in the general plan.</i></p>	<p>Consistent The General Plan has assumed six travel lanes on this portion of State Route 58 would be needed to support the land uses in the area.</p>	<p>Not Consistent The No-Build Alternative would be inconsistent with the recommendations of the General Plan.</p>
<p><i>Policy 2: Establish the following standards for the street system: Arterials on a State Highway should have 6 lanes, 110–130 feet of right-of-way, at least 90 feet of pavement width, and no curb parking.</i></p>	<p>Consistent The Build Alternative (Preferred Alternative) would improve State Route 58 to include six travel lanes consistent with the design standards.</p>	<p>Not Consistent The No-Build Alternative would make no improvements to State Route 58, keeping it inconsistent with the recommendations of the General Plan.</p>
<p><i>Policy 7: Minimize direct and uncontrolled property access from arterials.</i></p>	<p>Consistent The Build Alternative (Preferred Alternative) would control access to the arterial with some medians closures and</p>	<p>Not consistent The No-Build Alternative would implement access controls, and traffic level of service would be reduced.</p>

Policy	Build Alternative (Preferred Alternative)	No-Build Alternative
	enhance traffic flow.	
<i>Policy 9: Consider the construction of grade separations for intersections unable to meet minimum level of service standards.</i>	Consistent The Build Alternative (Preferred Alternative) would include a grade-separated rail crossing that would be built between Mohawk Street and Landco Drive to help reduce traffic when trains are crossing.	Not Consistent The No-Build Alternative would not provide a grade separation, and the traffic operation at the current rail crossings would continue to deteriorate.
<i>Policy 22: Design transportation improvements to minimize noise impacts on adjacent uses.</i>	Consistent See response to Land Use Policy 55.	Not Consistent See response to Land Use Policy 55.
Kern County General Plan		
<i>Goal 1: To make certain that transportation facilities needed to support development are available. To ensure that these facilities occur in a timely manner so as to avoid traffic degradation.</i>	Consistent The Build Alternative (Preferred Alternative) would improve State Route 58 to include six travel lanes consistent with the General Plan standards. The grade separation would minimize delays when vehicles need to stop when trains are on the track.	Not Consistent The No-Build Alternative would not improve the roadway to General Plan standards, and delays at the rail crossings would continue to deteriorate.
<i>Goal 5: Maintain a minimum Level of Service D for all roads throughout the County.</i>	Mostly Consistent The Build Alternative (Preferred Alternative) would improve the level of service on State Route 58 compared to existing	Mostly Inconsistent Level of service on State Route 58 would deteriorate compared to existing conditions. In 2015, there would be 12 intersections with

Policy	Build Alternative (Preferred Alternative)	No-Build Alternative
	<p>conditions. In 2015, there would be three intersections with signals that would not meet level of service D standards, though two of the intersections are west of the proposed improvements. In 2035, there would be six intersections with signals operating at less than level of service D.</p>	<p>signals that would not meet level of service D standards. In 2035, there would be 11 intersections with signals operating at less than level of service D.</p>
<p><i>Goal 6: Coordinate with the California Department of Transportation regarding various transportation developments within the County.</i></p>	<p>Consistent Caltrans, the Kern Council of Governments, Kern County, and the City of Bakersfield worked together to identify improvements that reduce congestion in the area. The Build Alternative (Preferred Alternative) is one of the improvements identified as an important improvement.</p>	<p>Not Consistent The No-Build Alternative would not make the improvements identified by agencies to serve the transportation needs of the area.</p>
<p><i>Goal 7: Kern County, through its representatives on the Kern Council of Government Board of Directors, shall coordinate with Kern County cities and Caltrans to develop more effective transportation planning and congestion management programs.</i></p>	<p>Consistent See discussion under Goal 6.</p>	<p>Not Consistent See discussion under Goal 6.</p>

Policy	Build Alternative (Preferred Alternative)	No-Build Alternative
Western Rosedale Specific Plan		
<i>Goal 5 Provide public facilities and services to serve existing and future development.</i>	<p>Consistent</p> <p>The project would provide improved circulation, which would improve service for existing and futures land uses in the area.</p>	<p>Not Consistent</p> <p>The No-Build Alternative would not improve the street system, and traffic congestion in the area would get worse.</p>

Avoidance, Minimization, and/or Mitigation Measures

The project is consistent with state, regional, and local planning programs. No avoidance, minimization and/or mitigation measures would be required.

2.1.2 Growth

Regulatory Setting

The Council on Environmental Quality regulations, which established the steps necessary to comply with the National Environmental Policy Act of 1969, require evaluation of the potential environmental consequences 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 Council of Environmental Quality regulations, 40 Code of Federal Regulations 1508.8, refer to these consequences as secondary impacts. Secondary impacts may include changes in land use, economic vitality, and population density, which are all elements of growth.

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

Affected Environment

Bakersfield is experiencing rapid population growth and development. In particular, areas of Bakersfield and Kern County west of State Route 99 are undergoing a rapid

transformation from agricultural land uses to residential, commercial, and industrial uses. This is part of an ongoing trend of growth in the region.

The 2000 Census found that Kern County had a total population of 661,645 persons. According to the Kern Council of Governments, between 2000 and 2006, Kern County's population increased by 118,472 persons, which is a nearly 18 percent increase in a 6-year period. This rapid growth is expected to continue. The Kern Council of Governments projects a 69 percent increase in population between the year 2000 and 2030 (California Department of Finance 2007). A large percentage of this projected growth is expected to occur within the City of Bakersfield.

According to the Kern Council of Governments, between 2000 and 2006, the City of Bakersfield's population increased by 61,335 persons. The population of the City of Bakersfield is projected to increase from 247,057 persons in 2000 to 418,500 persons by 2020 (California Department of Finance 2007). This is a 69 percent population increase over 20 years.

Every seven years, the California Department of Housing and Community Development prepares a State Housing Needs Assessment, which determines the housing requirements to meet the state demand over a 5-year period. Each jurisdiction is allocated the number of additional housing units necessary to meet state and local housing goals. This allocation, known as the Regional Housing Needs Allocation, also considers the number of housing units needed for specific income classes. The State has allocated Kern County 41,640 housing units for the period between January 1, 2006 and June 30, 2013. The Kern Council of Governments then assigns the housing requirements to the various jurisdictions in the county. The City of Bakersfield was assigned about 65 percent of the housing required for Kern County (27,252 units). This is in recognition that Bakersfield is the main metropolitan area in Kern County and is expected to continue to attract most of the regional growth.

When evaluating a project's potential effect on growth, Caltrans tries to determine the influence that the project may have on growth and development. This discussion asks the following questions:

- To what extent would the project create a change in travel times, travel cost, or accessibility to employment, shopping, or other destinations? Would this change affect travel behavior, trip patterns, or the attractiveness of some areas over others? (Discussed below as Travel and Accessibility.)

- To what extent would change in accessibility affect growth or land use change—its location, rate, type, or amount? (Discussed below as Effect of Accessibility Changes.)
- To what extent would resources of concern be affected by this growth or land use change? (Discussed below as Impacts on Resources of Concern.)

If, when answering these questions, it is determined that the project may influence the location, type, and rate of future growth and development, then additional analysis would be required.

Environmental Consequences

Build Alternative (Preferred Alternative)

By answering the previous questions, it was determined that the Build Alternative (Preferred Alternative) would not be expected to substantially influence the rate or location of growth in the area. The following explains that determination.

Travel and Accessibility: The project lies in an urban portion of the City of Bakersfield. State Route 58 provides access to employment and commercial areas for area residents. The project would provide improved access to employment and shopping located along the State Route 58 corridor. Since State Route 58 is an existing roadway, the proposed widening would not be expected to change travel behavior. The land uses that are attracting the trips (the jobs and shops) already exist or would be infill development consistent with the long-term growth projections. The study area is currently part of the urban center. The travel pattern in the study area would not be expected to have major changes, even with the future growth that Kern Council of Governments, together with the County of Kern and the City of Bakersfield, has planned for the region. The project would not result in excess capacity that would encourage development beyond the approved levels.

Effect of Accessibility Changes: As stated above, heavy growth is projected to occur in the metropolitan Bakersfield area. This growth has been assumed as part of the regional growth projections because it would serve as the natural extension of the existing urban center. The proposed roadway widening is within the most developed portion of Bakersfield and Kern County. Most of the area is already developed. Future development in the project study area would be mostly infill (development of vacant lots in areas that is mostly developed). As discussed in Section 2.1.1.1, several large-scale projects have recently been approved by the City of Bakersfield. Though outside the defined project study area, these future land uses will further define this

portion of Bakersfield as part of the urban core, consistent with local and regional planning programs. As a result, the project would not change access to areas or result in growth beyond what is assumed as part of regional and local planning efforts.

Impacts on Resources of Concern: “Resources of concern” include impacts to the community, biological resources, visual resources, or the physical environment (such as water quality or air quality impacts). Since the study area is already heavily developed, most of the projected growth would be infill development. This type of development generally has the smallest amount of impacts. The project has been incorporated into the local general plans, which provide a long-term vision for the community. The project would not provide capacity beyond what is required to support the planned growth for the region. Therefore, it would provide an important component of the circulation network necessary to support the community, not result in growth that would affect community resources.

The project is not expected to support growth that would have substantial impacts to the visual character or physical environment. The growth that would most directly take advantage of the improved circulation would be the infill development on vacant land along State Route 58. The infill development would be subject to a site plan review by the County or City (the local jurisdiction). As a result, new development could enhance the aesthetics of the area by having elements that contribute to the visual cohesiveness of the view from the roadway. Similarly, the local jurisdiction would require that projects comply with the applicable regulations, such as requirements, which have been adopted to protect the physical environment.

The resources with the highest potential for impacts associated with growth are biological resources. Development could affect open areas now used by the San Joaquin kit fox or burrowing owl, though the study area is not designated as critical habitat for either species. Recognizing the sensitivity of biological resources in the greater Bakersfield area, the Metropolitan Bakersfield Habitat Conservation Plan was developed to address the cumulative impacts associated with the growth of the region. Implementing measures were adopted to require payment of fees to help fund the protection of the most sensitive habitat. In addition to the standard measures provided in the Metropolitan Bakersfield Habitat Conservation Plan, this project has incorporated design measures to ensure protection of wildlife resources.

The project is expected to lessen both existing congestion and anticipated increased traffic associated with the growth already planned. Resources of concern are not expected to be substantially affected.

Based on the above discussion, no further analysis with respect to growth is required for this project.

No-Build Alternative

Growth in and around the project study area would continue even with the No-Build Alternative, but it would not be considered a direct or indirect effect of the No-Build Alternative. By not providing the improvements, growth would not be precluded or redirected to other areas because the basic roadway network is already provided in the study area. Growth would be in response to regional housing and population demand.

Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, and/or mitigation measures would be required.

2.1.3 Community Impacts

Information on community characteristics and cohesion was obtained from the *Community Impact Assessment* (January 2011) prepared for the project.

2.1.3.1 Community Character and Cohesion

Regulatory Setting

The National Environmental Policy Act of 1969 as amended 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 U.S. Code 4331[b][2]). The Federal Highway Administration in its implementation of National Environmental Policy Act (23 U.S. Code 109[h]) directs that final decisions on 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, 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.

Affected Environment

Regional Population Characteristics

According to the U.S. Census, between 1970 and 2000, the Kern County population almost doubled, from 331,100 to 661,645. Based on growth forecasts for Kern County, the population will continue to grow. According to the Kern Council of Governments, the Kern County population is projected to reach 1,114,878 by 2030 (Kern Council of Governments 2005).

Data from the U.S. 2000 census show that the median annual income level for households in the project study area is higher (\$56,768) than the median annual income for the City of Bakersfield (\$39,982) and Kern County (\$35,446). The data also show that a higher percentage (80 percent) of the population in the project study area identifies itself as white compared to the overall population in the City of Bakersfield (62 percent) and Kern County (62 percent). This information is detailed in Table 2.5.

Table 2.5 Comparative Population Characteristics

Population	Project Study Area Census Tracts		City of Bakersfield		County of Kern	
	Number	Percent	Number	Percent	Number	Percent
Total Population	22,574	100	247,057	100	661,645	100
Population 0–19 Years	7,874	35	88,361	36	232,134	35
Population 20–64 Years	13,055	58	137,015	55	367,457	56
Population 65+ Years	1,645	7	21,681	9	62,054	9
Median Age	34.68	N/A	30.1	N/A	30.6	N/A
Race: White	18,030	80	152,849	62	407,581	62
Race: Black or African American	378	2	22,641	9	39,798	6
Race: American Indian and Alaska Native	232	1	3,454	1	9,999	2
Race: Asian	501	2	10,708	4	22,268	3
Race: Native Hawaiian and Other Pacific Islander	9	0	298	0	972	0
Race: Some other race	10	0	46,151	19	153,610	23
Race: Two or more races (of total population)	453	2	10,956	4	27,417	4
Race: Hispanic or Latino	2,952	13	80,170	32	254,036	38

Source: U.S. Census 2000.

Neighborhoods/Communities

Because the project runs through many different neighborhoods, no single neighborhood defines the project study area. As discussed under Land Use (Section 2.1.1), next to State Route 58 in the study area are residential, business, and community uses. Key community facilities are shown in Figure 2-4 above. In addition, uses such as banks, large retail stores, grocery stores, churches, and hotels/motels help to define areas. Multiple large and small retail and commercial businesses are located within the project study area. Many of these businesses are smaller neighborhood-serving stores, while the larger retail/commercial uses serve a broader community (refer to Table 2.2, Projects/Development Within the Project Study Area).

Kern County is expecting a housing increase in the upcoming decades to support the growing population. For the period between 2006 and 2013, the City of Bakersfield has identified the need to build 27,252 new housing units. Between 2000 and 2030, Kern County's housing is projected to increase by 66 percent.

Environmental Consequences

Regional Population Characteristics

Build Alternative (Preferred Alternative)

The Build Alternative (Preferred Alternative) would not displace community services or a large number of uses that would change the population characteristics of the study area. The only displacements would be from the grade separation. The project would not interfere with the ability of the City of Bakersfield and the County of Kern to meet the long-range goals for the area.

No-Build Alternative

The No-Build Alternative does not propose any improvements; therefore, it would not change the regional population characteristics of the study area. Though it would result in more traffic congestion, the No-Build Alternative would not interfere with the ability of the City of Bakersfield and the County of Kern to meet the long-range growth projections for the area.

Neighborhoods/Communities

Build Alternative (Preferred Alternative)

The Build Alternative (Preferred Alternative) would require some right-of-way acquisition. The roadway widening would not require the land uses to change because, in the locations where more right-of-way is needed, the roadway would need

only a portion of each of the parcels. Where the grade separation at the San Joaquin Valley Railroad is proposed, the project would change site-specific land uses, but the acquisitions would not affect community cohesion because the Build Alternative (Preferred Alternative) (1) would not bisect a neighborhood or community; (2) would not cut off access to the existing community's services; (3) would not change existing commute patterns or transit routes; and (4) would not displace any community-serving facilities. Only one residential parcel would be acquired.

No-Build Alternative

The No-Build Alternative would not negatively affect community facilities or community cohesion, and no facilities would be displaced with this alternative.

Avoidance, Minimization, and/or Mitigation Measures

Regional Population Characteristics

No adverse impacts would occur, and no avoidance, minimization, and/or mitigation measures would be required.

Neighborhoods/Communities

No adverse impacts would occur, and no avoidance, minimization, and/or mitigation measures would be required.

2.1.3.2 Relocations and Property Acquisition

Information on relocations was obtained from the *Community Impact Assessment* (June 2011) prepared for the project.

Regulatory Setting

The Caltrans Relocation Assistance Program 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 Part 24. The purpose of the Relocation Assistance Program is to ensure that persons displaced as a result of a transportation project are treated fairly, consistently, and equitably so that such persons will not suffer disproportionate injuries as a result of projects designed for the benefit of the public as a whole. See Appendix D for a summary of the Relocation Assistance Program.

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 U.S. Code 2000d, et seq.). See Appendix C for a copy of Caltrans' Title VI policy statement.

Affected Environment

As described above, the project study area has a mix of land uses including residential, commercial, and industrial uses. The eastern portion of the study area, near the San Joaquin Valley Railroad where most of the right-of-way would need to be acquired, is predominately industrial.

Environmental Consequences

Build Alternative (Preferred Alternative)

The roadway widening would require right-of-way from 65 parcels (partial acquisitions) and no full acquisitions (two parcels would receive compensation for damages, but no right-of-way would be taken). The roadway widening would not require relocation of any uses. The grade separation would result in six partial acquisitions and nine full acquisitions. The grade separation would not use the entire 11.2 acres acquired. The full acquisitions are needed because either the uses on the parcels would be affected or access to the parcel would be affected. Once the grade separation is built, unused land would probably be sold.

Construction of the grade separation in 2025 would result in the full acquisition of nine parcels and potentially 14 displacements. In 2011, of the nine parcels, seven have structures and one is undeveloped; there is also one parcel co-used with another, larger parcel that is not being acquired. Fourteen structures on the parcels are slated for acquisition; of these, nine currently contain operating businesses, three are unoccupied (vacant) buildings, and one has no known status. In addition, one parcel that is designated for industrial use has a residence that appears to be a non-conforming use.

Though not all the buildings are currently occupied, since the grade separation is not proposed to be built until 2025, it is possible that at the time of construction all the structures could be occupied. If that were the case, the acquisitions would result in the need for relocation of 13 commercial/industrial uses and 1 non-conforming residential use. The undeveloped parcel contains an oil well. It is anticipated that the oil well would be retained on-site with access provided.

Displacements are shown in Table 2.6.

Table 2.6 Displacements–Build Alternative (Preferred Alternative)

Parcel	Address	Type of Use	Business Name	Approximate Number of Employees*
332-270-05	5601 Rosedale Highway	Commercial/Industrial	Bakersfield Cabinet and Stone	10–24
	5455A Rosedale Highway		Bakersfield Golf Cart Company	1–4
	5455 Rosedale Highway		Vacant	–
332-270-04	5425 Rosedale Highway	Commercial/Industrial	Color Connection Paint & Supplies Colors	1–4
332-270-03	5403 Rosedale Highway	Commercial/Industrial	Undeveloped; oil well	Not applicable
332-270-02	5401 Rosedale Highway	Commercial/Industrial/ Residential	Best Price Home Furniture	1–4
	2513 Parker Lane		Unknown Use	Not available
	2511 Parker Lane		Vacant	Not applicable
	2509 Parker Lane		Vacant	Not applicable
	2501 Parker Lane		Residential	Not applicable
332-020-50	5260 Rosedale Highway	Commercial/Industrial	Speed A Way Smog	8
			Speed Quest Motor Sports	5-9
332-020-51	5200 Rosedale Highway	Commercial/Industrial	Hall Letter Shop	20–49
332-020-83	2724 Landco Drive	Commercial/Industrial	Rock Bottom Pool and Landscape Company	20–49
332-020-84	5150 Rosedale Highway	Commercial/Industrial	Barnes Welding Supply	10
332-270-14		Commercial/Industrial	Independent Pipe & Steel	unknown

* Source: *Community Impact Assessment* 2011.

According to the *Community Impact Assessment*, an adequate number of business replacement sites for lease or purchase are available in the project study area. Table 2.7, Replacement Non-Residential Stock, shows the number of business sites available for rent, purchase or development.

Table 2.7 Replacement Non-Residential Stock

Type of Business	Number
Construction	104
Manufacturing	25
Retail	122
Service	167

Source: *Community Impact Assessment* 2011

Relocation assistance and compensation would be provided in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act and the Caltrans Relocation Assistance Program. None of these uses would require special consideration for relocation.

As discussed in Section 2.1.1, Land Use, the Build Alternative (Preferred Alternative) would also require partial acquisitions of right-of-way from about 71 parcels with a total area of 2.251 acres (1.681 acres for the roadway widening and 0.570 acre for the grade separation). In addition, there are two parcels where improvements would be removed (signage and parking), but no right-of-way acquisition is required. The partial acquisitions would not displace any current uses. Table 2.3 identifies the type of uses affected by the partial acquisitions. Detailed information on the amount of right-of-way required from each parcel is provided in Appendix K.

No-Build Alternative

The No-Build Alternative would not provide any improvements to State Route 58. No right-of-way impacts would occur, and no relocations would be necessary.

Avoidance, Minimization, and/or Mitigation Measures

The following condition and measure would further reduce relocation impacts:

Standard Condition

SC-1 Prior to construction, the City or County will obtain all required right-of-way for the roadway and grade separation. Owners of property to be acquired shall be compensated for the fair market value of the property as well as damages, if any, to the remaining portions of their properties in accordance with the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act. Relocation assistance and counseling will be provided to displaced businesses in accordance with the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act to ensure adequate relocation for displaced businesses. All eligible displacees will be eligible for moving expenses. All benefits and services will be provided equitably to all relocatees without regard to race, color, religion, age, national origin, or disability as specified under Title VI of the Civil Rights Act of 1964.

Minimization Measure

CI-1 During design of the grade separation, the City shall evaluate the feasibility of providing access to the oil well located on parcel 332-270-03. This would allow the well to be protected in place.

2.1.3.3 Environmental Justice

Regulatory Setting

All projects involving a federal action (funding, permit or land) must comply with Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, signed by President Bill Clinton on February 11, 1994. This order 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 the Department of Health and Human Services poverty guidelines. For 2011, this was \$22,350 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, in Appendix C of this document.

Affected Environment

Demographic information shown in Table 2.5 was collected at the census tract level because that level of data represents the larger area being evaluated as the study area. It allows a more accurate identification of trends over time. However, for the analysis of environmental justice, block-level data were used to the extent that they were available to identify whether minority or low-income populations exist along State Route 58, and whether the project would disproportionately affect these populations.

For the analysis of the block data, 49 blocks along State Route 58 were identified. The parcels contained in these blocks would be the most directly affected by the project. Table 2.8 shows the population and racial breakdown along the identified blocks, as well as at the census tract level for the project study area, using data from the 2000 Census.

Table 2.8 Block Level, Project Study Area, City, and County Population Characteristics

Population	Block Level Adjacent to Project Alignment		Project Study Area Census Tracts		City of Bakersfield		County of Kern	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total Population	4,541	100	22,574	100	247,057	100	661,645	100
Population 0–19 Years	1,557	34	7,874	35	88,361	36	232,134	35
Population 20–64 Years	2,486	55	13,055	58	137,015	55	367,457	56
Population 65+ Years	498	11	1,645	7	21,681	9	62,054	9
Median Age	40.0	N/A	34.68	N/A	30.1	N/A	30.6	N/A
Race: White	3,977	88	18,030	80	152,849	62	407,581	62
Race: Black or African American	61	1	378	2	22,641	9	39,798	6
Race: American Indian and Alaska Native	52	1	232	1	3,454	1	9,999	2
Race: Asian	61	1	501	2	10,708	4	22,268	3
Race: Native Hawaiian and Other Pacific Islander	2	0	9	0	298	0	972	0
Race: Some other race	233	5	10	0	46,151	19	153,610	23
Race: Two or more races (of total population)	155	3	453	2	10,956	4	27,417	4
Race: Hispanic or Latino	548	12	2,952	13	80,170	32	254,036	38

Source: U.S. Census 2000.

The 2000 Census data for the blocks next to the roadway showed a population of 4,541. The population and racial breakdown are consistent between block level and census tract level analysis. The project study area is more predominately white (80 percent) compared to the city (62 percent) and the county (62 percent) populations. In addition, the project study area at the block level and census tract level has a lower minority population (i.e., for most of the ethnic and racial categories that are tracked by the U.S. Census) than that for the city or the county as a whole. Data from the 2000 Census show that the median annual income level for the households in the project study area is higher (\$56,768) than the median annual income for the City of Bakersfield (\$39,982) and Kern County (\$35,446). Table 2.9 provides household income data for the block groups adjacent to the roadway.

Table 2.9 Income Characteristics by Block Group Adjacent to the Project Alignment

	Census Tract 5.06 Block Group 2	Census Tract 5.07 Block Group 1	Census Tract 5.07 Block Group 2	Census Tract 38.04 Block Group 1	Census Tract 38.07 Block Group 2	Census Tract 38.08 Block Group 1	Census Tract 38.08 Block Group 2	Census Tract 38.10 Block Group 1	Census Tract 38.10 Block Group 2	Census Tract 38.11 Block Group 1	Census Tract 38.11 Block Group 2	Census Tract 38.12 Block Group 1	Total/Average
Number of households	45	550	41	1,166	381	630	584	406	376	412	405	1,345	Total 6,341
Median household income	25,455	62,838	25,074	54,779	45,433	58,000	55,643	97,434	92,593	39,769	45,100	51,069	Average 54,432
Households with public assistance	0	10	0	0	31	13	0	0	0	6	16	28	Total 104
Percentage of households with public assistance	0	2	0	0	8	2	0	0	0	1	4	2	Average 2
Total population	112	1,422	92	3,791	1,076	1,971	1,751	1,406	1,195	1,146	1,004	3,823	Total 18,789
Individuals living below the poverty status	31	8	0	103	207	115	52	46	113	134	115	177	Total 1,101
Percentage below poverty status	28	1	0	3	19	6	3	3	9	12	11	5	Average 6

The data in the table are presented by block group because income information at the block level is not readily available from the U.S. Census. In the year 1999 (the base year in the 2000 Census data for income), the median income for the block groups along the alignment ranged from \$25,074 to \$97,434.

Low-income individuals are also located in block groups that have high median incomes, as shown by the number of individuals receiving public assistance. Based on field observations, there are indicators—such as manufactured homes (between Calloway Drive and El Toro Viejo Road) and multi-family residential developments—that lower-income housing is dispersed throughout the entire project area. Local newspapers and advertising fliers show listings of bank-owned properties for sale throughout the region.

Environmental Consequences

Build Alternative (Preferred Alternative)

The analysis first considered whether, at the block or block group level, there was a disproportionate number of minority or low-income groups that would be potentially affected by the project. Census data show that minority groups are less likely to live next to the roadway than in the larger study area, the City of Bakersfield, and the County of Kern.

The study area as a whole does not disproportionately contain large numbers of low-income groups. Of the 1,236 households within the block groups next to the study area, 104 (about 2 percent) are receiving public assistance. This is consistent with the 2 percent of households within the project study area census tracts receiving public assistance and below the 7 percent of the citywide and 8 percent of the countywide households receiving public assistance. Similarly, the percent of individuals living below the poverty level is consistent with the percent within the study area census tracts and below the citywide and countywide numbers at poverty level.

In assessing the potential for environmental justice impacts, the first consideration was whether the right-of-way impacts would be most heavily concentrated in locations with minority or low-income populations. The assessment states that the number of homes and businesses that will be directly affected is a very small percentage of the homes and businesses within the project study area.

The Build Alternative (Preferred Alternative) would result in one residential displacement associated with the grade separation (this residential use is zoned

industrial and is most likely a non-conforming use) and 8 partial acquisitions of residential property. The size of the partial acquisitions would not affect the function of the homes. The 8 affected homes are scattered throughout the study area and are not clustered in one particular area that is more predominately low-income or minority. None of the commercial uses that would be displaced when the grade separation is built are oriented to minority or low-income groups. Therefore, when considering displacements, it was determined that the project would not result in an environmental justice concern.

Factors other than right-of-way impacts were also evaluated when assessing the potential for environmental justice impacts. Consideration was given to whether the project would result in other environmental impacts—such as greater air emissions, noise, or change to transit service—that would be most heavily borne by the minority or low-income groups.

The project would not increase localized air pollution levels. Since the project would improve traffic flow, the air emissions under project conditions would be less than the air emissions under the No-Build Alternative.

The project would result in a slight increase in traffic noise compared to existing conditions and the No-Build Alternative. As discussed in the Section 2.2.3, Noise, generally a change of over 5 A-weighted decibels is readily noticeable. No locations would have an increase of 5 A-weighted decibels or more compared to existing conditions. Generally, the increased traffic noise would not be perceptible, especially when the increased noise level would occur over a 20-year period. The increase in the noise would be relatively consistent throughout the study area and would not disproportionately affect minorities or low-income population.

The project would not require any change to transit operations, which is often a concern to low-income groups who are more likely to be transit-dependent. Existing bus lines and bus stops would be maintained during construction. The Build Alternative (Preferred Alternative) would not result in impacts to facilities that provide services to minority or low-income groups.

Based on the above discussion and analysis and per Executive Order 12898 regarding environmental justice, the Build Alternative (Preferred Alternative) would not cause disproportionately high or adverse effects on any minority or low-income populations.

No-Build Alternative

The No-Build Alternative would not make any improvements to State Route 58. This alternative would not disproportionately affect minority or low-income populations.

Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures would be required.

Based on the above discussion and analysis, the Build Alternative (Preferred Alternative) would not cause disproportionately high and adverse effects on any minority or low-income populations per Executive Order 12898 regarding environmental justice.

2.1.4 Utilities/Emergency Services

Affected Environment

Utilities

Information for this section was taken from the *Community Impact Assessment*. The project is served by the following water, wastewater, gas, electric, and telecommunications systems providers:

<i>Water Service:</i>	City of Bakersfield, California Water Service, Vaughn Water Company
<i>Wastewater:</i>	City of Bakersfield, Kern County Waste Management Department
<i>Gas:</i>	Pacific Gas and Electric (PG&E), Southern California Gas Company
<i>Electric:</i>	Pacific Gas and Electric (PG&E)
<i>Telecommunications:</i>	Southwestern Bell Corporation (SBC)/American Telephone and Telegraph Communications (AT&T), Time Warner Cable
<i>Oil and Petroleum Lines:</i>	Equilon Oil Pipeline, Chevron, Shell, Big West, Texaco Downstream Properties Inc., and San Joaquin Facilities Management Inc.

These service providers have utilities within the project's right-of-way. The following utilities are located within the project's footprint (or area of disturbance):

- Water lines in the project area are typically 35 inches or 16 inches in diameter.
- Electrical lines in the project area typically have between 8-inch to 20-inch casings.
- Gas lines in the project area are typically 2 inches in diameter.
- Cable television lines in the project area typically consist of buried cable.
- Oil and petroleum pipelines in the project area are typically 12 inches in diameter.
- Fiber optic lines run on the south side of the road. The line extends from San Luis Obispo to Bakersfield.

Emergency Services

The Kern County Fire Department and City of Bakersfield Fire Department provide fire protection and emergency medical services to the area. Greenacres Station No. 65 at 9420 Rosedale Highway is the only station along State Route 58 in the project study area. Plans to relocate the Greenacres Fire Station No. 65 are currently under review. The new fire station is expected to be operational at its new location within about 18 to 24 months (at the writing of this document).

The Bakersfield Police Department, Kern County Sheriff's Department and California Highway Patrol provide law enforcement and police service to the study area.

Environmental Consequences

Build Alternative (Preferred Alternative)

Utilities

All the utility companies identified above have facilities in the existing right-of-way. The Build Alternative (Preferred Alternative) would not involve the construction of new utility facilities or require existing facilities to be upgraded, but there would be the need to move facilities as part of construction of the road widening. No long-term impacts are expected. Giving enough notice to the utility companies would allow them to plan for the relocation of their facilities. This type of coordination is a standard process during the design phase. No utility services would be disrupted during construction.

In addition, the Build Alternative (Preferred Alternative) would require that existing oil and petroleum lines be relocated as part of the roadway widening construction. The City would coordinate with the owner of the pipelines to ensure that no notable disruption of operations occurs during construction.

When the grade separation is built in 2025, utilities would be relocated to the north side of the roadway to allow access to the utilities for maintenance.

Emergency Services

The Build Alternative (Preferred Alternative) could result in short-term construction impacts to emergency access due to traffic delays. This would be for a short period, and the roadway would stay open during construction.

A standard condition for roadway projects is to prepare a Traffic Management Plan. This plan includes coordination with emergency service providers and requires that these providers are notified of each construction stage and any expected traffic shifts.

In the long term, the Build Alternative (Preferred Alternative) would serve to improve circulation and emergency response times along State Route 58.

No-Build Alternative

The project would not have any direct impact on utilities or cause construction delays that could affect emergency services. However, without the circulation improvements, there would be a reduced traffic level of service on State Route 58 that could result in delays for emergency response vehicles.

Avoidance, Minimization, and/or Mitigation Measures

Standard conditions that would minimize any potential impact include coordinating with all affected utility providers to ensure avoidance of any notable service disruptions during the extension or relocation of facilities.

Caltrans and the City would also require the contractor to follow a Traffic Management Plan (see Standard Condition SC-2 at the end of Section 2.1.5) to avoid impacts to emergency service providers. No additional avoidance, minimization, and/or mitigation measures are necessary.

2.1.5 Traffic and Transportation/Pedestrian and Bicycle Facilities

Regulatory Setting

Caltrans, as assigned by the Federal Highway Administration, 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 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.

Caltrans is committed to carrying out the 1990 Americans with Disabilities Act (ADA) by building transportation facilities that provide equal access for all persons. The same degree of convenience, accessibility, and safety available to the general public will be provided to persons with disabilities.

Affected Environment

Traffic and Transportation

An approved *Final Traffic Operations Report* (March 2011) was prepared for the project. The report evaluates the project's potential effect on traffic and circulation, both during construction and after completion of the project. The traffic study area includes two intersections west and four intersections east (six total) beyond the proposed limits of improvements.

As discussed in Section 1.2.2, the traffic operations on a transportation facility are measured in terms of level of service. Level of service is defined within a range from level of service A through level of service F, with level of service A being the least congested and level of service F being the most congested. Level of service E represents "at-capacity" operations. The level of service descriptions are shown in Figure 1-3 in Chapter 1.

Thirty intersections were studied as part of the traffic study for this project (see Figure 1-2). Intersections both east and west of the project improvements were studied to understand if the project would cause any impacts on State Route 58 after project improvements were built.

Table 2.10 provides the existing levels of service for intersections in the study area for both morning and evening peak hours. For intersections without signals, the table shows both the average and the worst-case conditions. Average conditions represent the operations of the entire intersection; worst-case conditions represent the most delayed travel movement (a left-turn lane).

**Table 2.10 Intersection Levels of Service (Existing, 2015, and 2035)
No-Build Alternative and Build Alternative (Preferred Alternative)**

Intersection	Existing Conditions			2015				2035			
	Traffic Control	Peak Hour	LOS ^a Average (Worst Case) ^b	Traffic Control	Peak Hour	No-Build Alternative LOS ^a Average (Worst Case) ^b	Build Alternative LOS ^a Average (Worst Case) ^b	Traffic Control	Peak Hour	No-Build Alternative LOS ^a	Build Alternative LOS ^a
Renfro Road/State Route 58	Signals	AM	C	Signals	AM	D	D	Signals	AM	C	C
		PM	C		PM	E	E		PM	C	C
Jenkins Road/State Route 58	Signals	AM	B	Signals	AM	C	C	Signals	AM	B	B
		PM	C		PM	F	F		PM	C	C
Allen Road/State Route 58	Signals	AM	D	Signals	AM	E	D	Signals	AM	F	D
		PM	E		PM	F	D		PM	F	D
Maher Way/State Route 58	Side Street Stop	AM	A I	Side Street Stop ^d	AM	A (F)	A (B)	Side Street Stop ^d	AM	A (F)	A (B)
		PM	A (D)		PM	C (F)	A (B)		PM	F (F)	A (B)
Old Farm Road/State Route 58	Signals	AM	B	Signals	AM	C	C	Signals	AM	D	C
		PM	C		PM	D	C		PM	D	C
Jewetta West-Lone Oak Drive/State Route 58	Side Street Stop	AM	A I	Side Street Stop ^d	AM	A (E)	A (C)	Side Street Stop ^d	AM	A (F)	A (D)
		PM	A I		PM	A (F)	A (D)		PM	A (F)	A (D)
Enger Lane-Jewetta East/State Route 58	Side Street Stop	AM	A I	Side Street Stop ^d	AM	A I	A (B)	Side Street Stop ^d	AM	A (D)	A (C)
		PM	A (E)		PM	B (F)	A (D)		PM	C (F)	A (F)
Verdugo Lane/State Route 58	Signals	AM	D	Signals	AM	E	D	Signals	AM	E	E
		PM	E		PM	E	C		PM	F	D
Dean Avenue/State Route 58	Side Street Stop	AM	A (E)	Side Street Stop ^d	AM	F (F)	A (C)	Side Street Stop ^d	AM	F (F)	A (D)
		PM	B (F)		PM	F (F)	A (C)		PM	F (F)	A (D)
Calloway Drive/State Route 58	Signals	AM	E	Signals	AM	F	D	Signals	AM	F	D
		PM	F		PM	F	D		PM	F	D
NW Promenade II/State Route 58	Signals	AM	A	Signals	AM	A	A	Signals	AM	A	A
		PM	B		PM	B	B		PM	B	B
Main Plaza Drive-El Toro Viejo/State Route 58	Signals	AM	B	Signals	AM	B	B	Signals	AM	C	B
		PM	C		PM	C	B		PM	C	C
NW Promenade/State Route 58	Signals	AM	B	Signals	AM	B	B	Signals	AM	B	B
		PM	B		PM	B	B		PM	B	B

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Intersection	Existing Conditions			2015				2035			
	Traffic Control	Peak Hour	LOS ^a Average (Worst Case) ^b	Traffic Control	Peak Hour	No-Build Alternative LOS ^a Average (Worst Case) ^b	Build Alternative LOS ^a Average (Worst Case) ^b	Traffic Control	Peak Hour	No-Build Alternative LOS ^a	Build Alternative LOS ^a
Coffee Road/State Route 58	Signals	AM	E	Signals	AM	F	D	Signals	AM	F	D
		PM	E		PM	F	D		PM	F	E
Jet Way/State Route 58	Signals	AM	C	Signals	AM	B	A	Signals	AM	B	A
		PM	B		PM	B	A		PM	B	A
Henry Lane/State Route 58	Side Street Stop	AM	A (E)	Side Street Stop ^d	AM	F (F)	A (E)	Side Street Stop ^d	AM	F (F)	A (E)
		PM	A (E)		PM	F (F)	A (D)		PM	F (F)	A (E)
Patton Way/State Route 58	Signals	AM	B	Signals	AM	F	B	Signals	AM	F	B
		PM	B		PM	F	C		PM	F	C
Wedding Lane/State Route 58	Side Street Stop	AM	F (F)	Side Street Stop ^d	AM	F (F)	A (F)	Side Street Stop ^d	AM	F (F)	A(E)
		PM	A (D)		PM	F (F)	A (C)		PM	F (F)	A (D)
Wear Street/State Route 58	Side Street Stop	AM	F (F)	Side Street Stop ^d	AM	F (F)	A (E)	Side Street Stop ^d	AM	F (F)	A (D)
		PM	C (F)		PM	F (F)	A (D)		PM	F (F)	A (D)
Fruitvale Avenue/State Route 58	Signals	AM	F	Signals	AM	F	D	Signals	AM	F	C
		PM	F		PM	F	C		PM	F	C
Kilmer Way/State Route 58	Side Street Stop	AM	A (F)	Side Street Stop ^d	AM	F (F)	A (F)	Side Street Stop ³	AM	A (F)	A (E)
		PM	A (F)		PM	F (F)	A (E)		PM	F (F)	A (E)
Mohawk Street/State Route 58	Side Street Stop ^c	AM	A (F)	Signals	AM	F	D	Signals	AM	F	F
		PM	A (F)		PM	F	D		PM	F	F
Parker Lane/State Route 58	Side Street Stop	AM	A (F)	Side Street Stop ^d	AM	F (F)	A (B)	Side Street Stop ^d	AM	F (F)	A (B)
		PM	A (F)		PM	F (F)	A (B)		PM	F (F)	A (B)
Landco Drive/State Route 58	Signals	AM	C	Signals	AM	E	A	Signals	AM	E	B
		PM	C		PM	F	B		PM	F	B
Fairhaven Drive/State Route 58	Side Street Stop	AM	F (F)	Side Street Stop ^d	AM	F (F)	A (F)	Side Street Stop ^d	AM	F (F)	A (C)
		PM	A (F)		PM	F (F)	A (C)		PM	F (F)	A (D)
Gibson Street/State Route 58	Signals	AM	C	Signals	AM	F	C	Signals	AM	F	B
		PM	C		PM	F	C		PM	F	D- /E
Rosedale Plaza-Costco/State Route 58	Signals	AM	A	Signals	AM	A	B	Signals	AM	A	A
		PM	B		PM	C	C		PM	C	C

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Intersection	Existing Conditions			2015				2035			
	Traffic Control	Peak Hour	LOS ^a Average (Worst Case) ^b	Traffic Control	Peak Hour	No-Build Alternative LOS ^a Average (Worst Case) ^b	Build Alternative LOS ^a Average (Worst Case) ^b	Traffic Control	Peak Hour	No-Build Alternative LOS ^a	Build Alternative LOS ^a
Camino del Rio Court/State Route 58	Signals	AM	C	Signals	AM	D	D	Signals	AM	C	C
		PM	C		PM	E	E		PM	E	E
State Route 99 Southbound Ramps/State Route 58	Signals	AM	D	Signals	AM	B	B	Signals	AM	C	C
		PM	D		PM	C	C		PM	E	F
Buck Owens Boulevard/State Route 58	Signals	AM	D	Signals	AM	C	C	Signals	AM	C	C
		PM	F		PM	D	D		PM	D	D

Note: **Bold** font and shading indicates intersection operations worse than LOS D.
LOS – level of service

^a Level of service calculations completed using the Synchro 6 analysis software package.

^b Average conditions represent the operations of the entire intersection, while the worst-case scenario represents the most delayed travel movement (e.g., a left-turn lane).

^c At the time traffic counts were done for the existing conditions, Mohawk Street did not have signals. A signal has subsequently been installed.

^d Side street stop may operate better than analysis estimates due to available gaps in major street traffic.

Source: *Traffic Operations Report* 2011.

In summary, the following five intersections with signals on State Route 58 between Allen Road and State Route 99 currently operate at worse than level of service D under existing conditions:

- State Route 58/Allen Road
 - Level of service E during the afternoon peak hour
- State Route 58/Verdugo Lane
 - Level of service E during the afternoon peak hour
- State Route 58/Calloway Drive
 - Level of service E during the morning peak hour
 - Level of service F during the afternoon peak hour
- State Route 58/Coffee Road
 - Level of service E during both morning and afternoon peak hours
- State Route 58/Fruitvale Avenue
 - Level of service F during both morning and afternoon peak hours

The following intersection with signals beyond the limits of improvements currently operates at worse than level of service D under existing conditions:

- State Route 58/Buck Owens Boulevard
 - Level of service F during the afternoon peak hour

The following three intersections without signals (i.e., side street stops) on State Route 58 between Allen Road and State Route 99 currently operate at worse than level of service D under existing conditions for average conditions:

- State Route 58/Wedding Lane
 - Level of service F during the morning peak hour
- State Route 58/Wear Street
 - Level of service F during both the morning and afternoon peak hours
- State Route 58/Fairhaven Drive
 - Level of service F during both the morning and afternoon peak hours

Americans with Disabilities Act Facilities

At some locations within the project area are Americans with Disabilities Act facilities. These facilities include sidewalks and driveways that are of appropriate widths, curb cuts (which allow wheelchair access), and continuous sidewalks. Improvements are not consistent throughout the study area.

Parking

The project study area is in an area with many land uses along its 5.6-mile length, including residential, commercial, and industrial uses. Off-street parking is provided to serve these uses. No on-street parking is provided along State Route 58.

Public Transportation

The Golden Empire Transit District operates public transit within the metropolitan Bakersfield area, including the project alignment. Golden Empire Transit has two lines that run on State Route 58: the Rosedale/Cal State Line (Route 14) and the Rosedale Connector Line (Route 18).

The closet train station to the project site is two miles east of the project study area and serves as the southern end for Amtrak's San Joaquin route.

Pedestrian and Bicycle Facilities

No pedestrian trails or bike paths exist along State Route 58. Though bike paths may not be formally designated, there are no restrictions on bicyclists using State Route 58. Sidewalks exist throughout the study area, but are not continuous on either side of the roadway.

Environmental Consequences

Traffic and Transportation

As the Bakersfield area grows, the future travel demand will cause more traffic congestion on State Route 58. The projected traffic volumes would be the same with both the Build and No-Build Alternatives because the same growth assumptions would apply in both cases.

Two timeframes were evaluated in the traffic study: 2015 and 2035. The Federal Highway Administration requires that the studies evaluate the traffic for the year the improvements are expected to be completed, which is 2015, and a design year, which is 20 years after opening (2035). The Kern Council of Governments Model is the regional travel demand forecasting model that was used to forecast the future traffic volumes in the study area. The traffic modeling effort is discussed in more detail in the *Traffic Operations Report*.

2015 Roadway Network Assumptions

The following major roadway improvements were included in the 2015 model and would directly affect travel patterns on State Route 58 in the project study area:

- Completion of the Westside Parkway from Truxtun Avenue to Stockdale Highway.
- Extension of Mohawk Street south of State Route 58, across the Kern River, with an interchange at Westside Parkway, which ends at California Avenue.
- Completion of the 24th Street improvements between the southbound State Route 99/State Route 58 (Rosedale Highway) ramp intersection east to M Street.
- Completion of the Hageman Road Project, which extends Hageman Road across State Route 99 to connect with Golden State Avenue (State Route 204).

Table 2.10 shows projected level of service for the study intersections for 2015. This information is discussed in more detail below for both the Build and No-Build Alternatives.

2035 Roadway Network Assumptions

The 2035 model roadway network assumptions include the completion of the Thomas Roads Improvement Program projects as well as the roadway projects included in the regional traffic impact fee program. One of the major Thomas Roads Improvement Program projects that would affect State Route 58 is the completion of the Centennial Corridor. The Centennial Corridor would connect the Westside Parkway to State Route 58 east of State Route 99. This would provide an alternate route for east-west traffic. The current forecast model assumes this connection will extend from the existing State Route 58/State Route 99 interchange (the freeway to freeway connection, not the Rosedale Highway interchange) to the proposed Westside Parkway/Mohawk Street interchange.

Another regional Thomas Roads Improvement Program improvement that would affect traffic patterns on State Route 58 is the completion of the West Beltway, which would provide a new north-south route. The regional traffic impact fee program includes a range of local street improvements designed to relieve traffic congestion. These improvements include the widening of several north-south roadways that cross State Route 58, particularly in the western portion of the study area, as well as the widening of State Route 58 from Allen Road to State Route 43 (known locally as Enos Lane).

Table 2.10 provides the projected 2035 level of service at study area intersections. This information is discussed in more detail below for both the Build and No-Build Alternatives.

Build Alternative (Preferred Alternative)

2015 Traffic Impacts

The widening of State Route 58 would provide six lanes between Allen Road and State Route 99. In addition, the Build Alternative (Preferred Alternative) assumes that there would be minor improvements to side streets. These improvements include (1) restriping the northbound approach on Allen Road to provide two northbound through lanes and (2) restriping Fruitvale Avenue to provide an additional turn lane on the side street approaches (both northbound and southbound). The following side street access would be changed to allow only right turns in and out at the following intersections without signals along State Route 58:

- Maher Way
- Enger Lane/Jewetta Avenue
- Dean Avenue
- Henry Avenue
- Wedding Lane
- Wear Street
- Kilmer Way
- Parker Lane
- Fairhaven Drive

Based on the results of the traffic projections, vehicle delays at the study intersections decrease with the proposed widening of State Route 58 from four to six lanes when compared to existing conditions and the No-Build Alternative in 2015. In 2015, the Build Alternative (Preferred Alternative) would have three deficient intersections with a signal; existing conditions would have nine deficient intersections (six with signals and three without signals); and the No-Build Alternative would have 19 deficient intersections (12 with signals and seven without signals). In the 2015 build scenario, there would be no intersections without signals that operate at worse than a level of service D under average conditions.

With the Build Alternative (Preferred Alternative), the following three intersections with signals are projected to operate at worse than level of service D during one or both peak hours:

- State Route 58/Camino del Rio Court
 - Level of service E during the afternoon peak hour
- State Route 58/Renfro Road
 - Level of service E in the afternoon peak hour
- State Route 58/Jenkins Road
 - Level of service F in the afternoon peak hour

It should be noted that the last two intersections (State Route 58 at Renfro Road and at Jenkins Road) are beyond the limits of improvement.

With the Build Alternative (Preferred Alternative), there would be fewer traffic delays at all study intersections than with the No-Build Alternative, and there would be fewer deficient intersections than under existing conditions. The intersections with signals along State Route 58 between Allen Road and Gibson Street would operate at level of service D or better during morning and evening peak hour conditions.

The intersection at Camino Del Rio Court is projected to operate at level of service E conditions. Since it would also have a level of service E under the No-Build Alternative, this deficiency is not because of the Build Alternative (Preferred Alternative) improvements. The deficiency is due to the volume of local and regional traffic. The intersections just west of the project improvements are also projected to operate at deficient levels of service. Because Renfro Road would have level of service E under the No-Build Alternative, and Jenkins Road would have level of service F under the No-Build Alternative, these deficiencies are not due to the Build Alternative (Preferred Alternative) improvements.

Under 2015 conditions, none of the intersections without signals in the study area would require signals. There would be five intersections without signals that would have a particular movement (such as left turns) that is deficient. All of these intersections are, as a whole (the average), operating at an acceptable level of service. These intersections operate at a better level of service than with the No-Build Alternative, so these deficiencies are not due to the Build Alternative (Preferred Alternative) improvements.

2035 Traffic Impacts

As discussed above, the 2035 model roadway network assumes the completion of the Thomas Roads Improvement Program projects as well as the roadway projects included in the regional traffic impact fee program. The existing traffic impact fee program assumes improvements to four intersections along State Route 58 in the

study area, including Allen Road, Calloway Drive, Coffee Road, and Mohawk Street. These have been included for the 2035 Build Alternative. However, these improvements would not occur if State Route 58 is not widened because they would have limited benefit without the roadway widening.

Based on the results of the traffic projections, vehicle delays at the study intersections decrease with the proposed widening of State Route 58 from four to six lanes when compared to the No-Build Alternative in 2035. In 2035, the Build Alternative (Preferred Alternative) would have 10 deficient intersections (six with signals and four without signals); the existing condition would have nine deficient intersections (six with signals and three without signals); and the No-Build Alternative would have 19 deficient intersections (11 with signals and eight without signals).

With the Build Alternative (Preferred Alternative), the following six intersections with signals are projected to operate at worse than level of service D during one or both peak hours:

- Verdugo Lane/State Route 58
 - Level of service E during the morning peak hour
- Coffee Road/State Route 58
 - Level of service E during the afternoon peak hour
- Mohawk Street/State Route 58
 - Level of service F during both the morning and afternoon peak hours
- Gibson Street/State Route 58
 - Level of service D-/E during the afternoon peak hour
- Camino Del Rio/State Route 58
 - Level of service E during the afternoon peak hour
- State Route 99 Southbound Ramps/State Route 58
 - Level of service F during the afternoon peak hour

Similar to 2015 conditions, none of the intersections without signals in the study area would meet peak hour signal warrants under design year 2035 conditions. In 2035, four intersections without signals have particular movements (such as left turns) that are deficient. As a whole, all of these intersections are operating at acceptable levels of service. These intersections operate at a better level of service than with the No-Build Alternative, so these deficiencies are not due to the Build Alternative (Preferred Alternative) improvements.

No-Build Alternative

2015 Traffic Impacts

No improvements would be made with the No-Build Alternative. Side street access would remain the same, except for the improvements discussed above under 2015 Roadway Network.

As shown in Table 2.10, there would be more deficient intersections under 2015 No-Build conditions than under the baseline conditions. This is due to the increased traffic volumes associated with regional growth without providing any roadway improvements along this segment of State Route 58 to serve the growth. The following 12 intersections with signals are projected to operate at worse than level of service D in 2015 during one or both peak hours under the No-Build Alternative:

- Renfro Road/State Route 58
 - Level of service E during the afternoon peak hour
- Jenkins Road/State Route 58
 - Level of service F during the afternoon peak hour
- Allen Road/State Route 58
 - Level of service E during the morning peak hour
 - Level of service F during the afternoon peak hour
- Verdugo Lane/State Route 58
 - Level of service E during both the morning and afternoon peak hours
- Calloway Drive/State Route 58
 - Level of service F during both morning and afternoon peak hours
- Coffee Road/State Route 58
 - Level of service F during both morning and afternoon peak hours
- Patton Way/State Route 58
 - Level of service F during both morning and afternoon peak hours
- Fruitvale Avenue/State Route 58
 - Level of service F during both morning and afternoon peak hours
- Mohawk Street/State Route 58
 - Level of service F during both morning and afternoon peak hours
- Landco Drive/State Route 58
 - Level of service E during the morning peak hour
 - Level of service F during the afternoon peak hour

- Gibson Street/State Route 58
 - Level of service F during both the morning and afternoon peak hours
- Camino Del Rio/State Route 58
 - Level of service E during the afternoon peak hour

Note that the State Route 58/Renfro Road and the State Route 58 Jenkins Road intersections, though in the traffic study area, are west of the proposed improvements.

The remaining intersections with signals would operate at level of service D conditions or better during the peak hours. However, in 2015 with the No-Build Alternative, there would be 10 intersections without signals that have a particular movement, such as left turns, that are deficient. Of those 10 intersections, 7 would operate at a deficient level of service for the entire intersection. The State Route 58/Wedding Lane, State Route 58/Wear Street, and State Route 58/Fairhaven Drive were all deficient in existing conditions and would remain deficient in 2015.

2035 Traffic Impacts

As shown in Table 2.10, under 2035 No-Build conditions, the number of deficient intersections would increase compared to existing conditions and the 2035 build conditions. Again, this decrease in overall level of service is a result of the projected increase in regional traffic in 2035, which is due to regional growth, without the provisions of roadway improvements on this segment of State Route 58.

In 2035, the following 11 intersections with signals are projected to operate at worse than level of service D during one or both peak hours:

- Allen Road/State Route 58
 - Level of service F during both the morning and afternoon peak hours
- Verdugo Lane/State Route 58
 - Level of service E during the morning peak hour
 - Level of service F during the afternoon peak hour
- Calloway Drive/State Route 58
 - Level of service F during both the morning and afternoon peak hours
- Coffee Road/State Route 58
 - Level of service F during both the morning and afternoon peak hours
- Patton Way/State Route 58
 - Level of service F during both the morning and afternoon peak hours

- Fruitvale Avenue/State Route 58
 - Level of service F during both the morning and afternoon peak hours
- Mohawk Street/State Route 58
 - Level of service F during both the morning and afternoon peak hours
- Landco Drive/State Route 58
 - Level of service E during the morning peak hour
 - Level of service F during the afternoon peak hour
- Gibson Street/State Route 58
 - Level of service F during both the morning and afternoon peak hours
- Camino Del Rio/State Route 58
 - Level of service E during the afternoon peak hour
- State Route 99 SB Ramps/State Route 58
 - Level of service E during the afternoon peak hour

The remaining intersections with signals would operate at level of service D conditions or better during the peak hours. In addition to the 11 deficient intersections with signals, there would be 10 intersections without signals that have a particular movement, such as left turns, that are deficient. Of these 10 intersections, 8 would operate at a deficient level of service for the entire intersection, including the State Route 58/Wedding Lane, State Route 58/Wear Street, and State Route 58/Fairhaven Drive, which were also all deficient in existing conditions and the 2015 time frame.

Americans with Disabilities Act Facilities *Build Alternative (Preferred Alternative)*

The project would build facilities meeting the requirements of the Americans with Disabilities Act. Improvements would include installation of Americans with Disabilities Act-compliant ramps at curb returns, Americans with Disabilities Act-compliant sidewalk and driveway widths, and continuous sidewalks on at least one side of the roadway; the project would also include sound alerts on pedestrian crossing signals.

No-Build Alternative

The No-Build Alternative would not change existing conditions. State Route 58 does not currently provide improvements consistent with the Americans with Disabilities Act requirements, such as continuous sidewalks on at least one side of the roadway throughout the study area. With the No-Build Alternative, the improvements necessary to comply with the Americans with Disabilities Act would be built as

development occurs. This would result in improvements that are not consistent or continuous throughout the study area, and the timing of the improvements would be uncertain.

Parking

Build Alternative (Preferred Alternative)

With the Build Alternative (Preferred Alternative), 15 parcels would have direct parking impacts from the roadway widening. Based on early design, the roadway widening would affect about 103 parking spaces. Of those, 73 spaces could be replaced through restriping of the existing parking lots (Minimization Measure LU-2, presented under Land Use), and 30 would be lost as a result of the project. Not all these spaces would be in one location. The parcels affected by parking loss are shown in Table 2.11, Potential Parking Impacts.

Table 2.11 Potential Parking Impacts

Assessor Parcel Number	Potential Parking Spaces Affected	Original # of Parking Spaces	Potential Parking Loss Offsets
465-040-05	2	N/A	Parking area not striped
368-111-01	4	22	
368-111-21	1	9	
368-111-22	2	14	
368-082-27	2	23	
452-060-02	3	38	
332-260-25	8	28	All 8 spaces can potentially be restriped
332-260-24	8	25	All 8 spaces can potentially be restriped
332-260-23	27	35	All 27 spaces can potentially be restriped
332-260-22	20	29	All except 2 spaces can potentially be restriped (18 spaces replaced)
332-270-05	12	15+8	All 12 spaces can potentially be restriped
332-270-04	7	28	
332-230-64	3	28	
332-230-41	1	63	
332-141-39	3	35	
TBD-To be determined based on more detailed engineering evaluation. Source: <i>Community Impact Assessment 2011</i>			

No-Build Alternative

The No-Build Alternative does not propose any roadway improvements. There would be no impacts to parking.

Public Transportation

Build Alternative (Preferred Alternative)

The existing bus stops along State Route 58 would experience short-term, construction-related impacts. This would include potential relocation of bus stops to a different quadrant of the intersection. Additionally, pathways may be identified to allow bus riders to safely cross the construction area. Coordination with Golden Empire Transit as part of the Traffic Management Plan would be done to ensure the safety of individuals using buses during construction activities. No interruption of bus service is expected.

Once construction is completed, the reduced congestion would reasonably decrease commute time for bus riders, a beneficial effect of the project. However, existing bus stops occur outside of the through lanes. Bus turn-out bays would not be provided and the buses would stop in the right travel lane. While this will permit easy reentry of the bus into the flow stream, it will cause through traffic to stop behind buses. Golden Empire Transit has two lines that run on State Route 58 (Routes 14 and 18) that have buses about every 45 minutes. This would cause slight travel delays for travelers in the right-lane and would be an inconvenience that would be most noticeable during peak hour. However, the overall impact would be minimal.

No-Build Alternative

Under the No-Build Alternative, no impacts would occur to the existing public transit system. However, similar to cars, buses that use State Route 58 would also be affected by the additional congestion that would occur if improvements are not made.

Pedestrian and Bicycle Facilities

The General Plan does not designate any bike or pedestrian trails or paths along State Route 58 within the vicinity of the project study area. Given the right-of-way constraints and the high traffic volumes, a dedicated bikeway is not proposed as part of the project. The project would not place any restrictions on the use of State Route 58 by bicyclists or pedestrians. The project would provide a continuous sidewalk on at least one side of the roadway throughout the study area, which may encourage pedestrians. This would be a benefit of the project.

Avoidance, Minimization, and/or Mitigation Measures

Implementation of a Traffic Management Plan (see Standard Condition SC-2 below) would minimize impacts associated with the Build Alternative (Preferred Alternative) during construction. Minimization Measure LU-2 (presented under Land Use)

requires the evaluation of constructing additional parking on-site or restriping parking lots to minimize the loss of parking at those locations where impacts to parking have been identified. This would also help to reduce parking impacts.

Standard Condition

SC-2 A Traffic Management Plan shall be developed during the Plans, Specifications, and Estimates Phase to ensure safe and efficient traffic flow throughout the project study area during all phases of construction. The Traffic Management Plan shall optimize roadway capacity, signal phasing, and timing during construction. The City of Bakersfield shall ensure that emergency service providers are aware of each stage of construction and of any potential service delays. In addition, prior to each construction phase, the City of Bakersfield shall coordinate with Golden Empire Transit to develop appropriate safety provisions during construction. The Traffic Management Plan will include public notification of any modifications to bus stop locations or operational procedures during construction.

2.1.6 Visual/Aesthetics

Regulatory Setting

The National Environmental Policy Act of 1969 as amended establishes that the federal government use all practicable means to ensure all Americans safe, healthful, productive, and *aesthetically* (emphasis added) and culturally pleasing surroundings (42 U.S. Code 4331[b][2]). To further emphasize this point, the Federal Highway Administration in its implementation of the National Environmental Policy Act (23 U.S. Code 109[h]) directs that final decisions on 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 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” (California Public Resources Code Section 21001[b]).

Affected Environment

For the assessment of visual impacts, the project study area was identified as those areas that would have direct views of the project improvements. The visual character of the project study area is generally mostly urban, containing a mix of residential, industrial, and commercial development. There are no officially designated scenic highways or scenic vistas within the project study area.

The project study area is fairly flat and does not have any major natural features. In addition to buildings, there are many human-made features throughout the study area. The rail overcrossing at Jewetta Avenue, irrigation canals, overhead electrical and telephone lines, and billboards are the most noticeable features. Figures 2-5a through 2-5c are maps showing where photographs were taken. Figures 2-6a through 2-6f provide photographs of the various existing land uses and visual features in the project study area.

The project viewshed includes the areas likely to be affected by the visual changes as a result of the project. Because of the flat topography, project views are mostly limited to those uses along the project alignment and motorists on the roadway. No distant views of the roadway would be affected. Visual impacts are determined by defining the visual quality of the area, the expected change as a result of the project, and the sensitivity of the uses to those changes.

For this analysis, the project study area was divided into five “landscape units.” A landscape unit is an area with common features such as topography, vegetation, and land use. The visual quality of all of the landscape units ranged from low to moderate. No landscape unit is in a pristine, undisturbed natural condition, which would call for a higher visual rating.

Visual sensitivity is how sensitive an area is to changes. A low to moderate rating means that the project would not contrast with the visual quality of the existing environment. Figure 2-7 shows the location of the different landscape units. Table 2.12 provides a summary of the visual quality and visual sensitivity for each landscape unit.

Table 2.12 Landscape Unit Summary

Landscape Unit	Visual Quality	Visual Sensitivity
Residential	Moderate	Moderate
General Commercial	Moderate	Moderate
Mixed-Use	Low	Low-Moderate
Industrial	Low	Low
Undeveloped	Moderate	Moderate

Viewer groups that would see the project are drivers on the road, residents, and employees and customers of the commercial and office/light industrial uses along the

route. Residents would be more sensitive to changes than a driver passing through an area at 40-50 miles per hour.

The viewer groups in the project study area were divided into four categories. The quantity of viewers, their sensitivity to change, and the duration of their view were factors used to determine their response to change. A driver passing through the area at 40-50 miles per hour is not going to be as sensitive to changes in the visual environment as a resident would be. Table 2.13 provides a summary of the viewer groups and their responses.

Table 2.13 Viewer Group Summary

Viewer Group	Quantity	Sensitivity	Duration	Viewer Response
Drivers	High	Low	Short	Low
Residents	Moderate	High	Extended	High
Commercial Users	Moderate	Moderate	Short	Moderate
Office/Light Industrial Employees	High	Moderate	Extended	Moderate

Environmental Consequences

Caltrans’s Visual Impact Assessment Guide was used as guidance to determine the probable visual impacts of the State Route 58 Widening Project.

Build Alternative (Preferred Alternative)

The visual impacts of the project would be low to moderate. Since this area is very urban, the changes would not be as noticeable because they would blend with the urban nature of the area. Roadway widening under the Build Alternative (Preferred Alternative) would require minimal grading and would not greatly change how the roadway would look. The design feature that would be most different from what currently exists is the proposed San Joaquin Valley Railroad grade separation.

With all the uses next to the roadway and high traffic volumes, there are many viewers. Motorists would not see much change because the uses next to the roadway are the most important visual element. The uses would remain the same, and motorists would be in any given location for only a short time.

There are some residential uses in the western portion of the study area. The project would bring the road closer to these residential uses, which would seem like a visual change. But, other than the San Joaquin Valley Railroad grade separation, nothing about the project would make major changes to the visual character of the area. There are no residential uses near the grade separation. Since there would be no substantial

change in the roadway characteristics or visual character in this portion of the study area, visual impacts would be moderate to low for residential uses within the project study area.

This segment of State Route 58 has many employment and commercial uses. The Build Alternative (Preferred Alternative) would not block views of any surrounding areas. Because the nature of the changes to the roadway would be limited, this viewer group would not be adversely affected.

The San Joaquin Valley Railroad grade separation, which crosses the San Joaquin Valley Railroad rail line between Mohawk Street and Landco Drive, would introduce new structural elements (such as graded berms, retaining walls, and the bridge structure) into the view in this location. The overcrossing would result in a bridge about 25 feet high. Though this would result in a visual change, the nature of the improvement would not substantially contrast with the surrounding area because the land uses surrounding Mohawk Street and Landco Drive are mostly commercial and industrial. The grade separation for State Route 99, which is about 0.75 mile east of Landco Drive, provides a similar structure element in the local view. Figure 2-8 is a visual simulation of the grade separation at the San Joaquin Valley Railroad from the driver's perspective, looking southwest. Due to the industrialized nature of the surrounding area, the grade separation would not block any scenic resources.

No-Build Alternative

The No-Build Alternative would not affect visual resources. The views from and of the project study area would remain the same.

Avoidance, Minimization, and/or Mitigation Measures

The Build Alternative (Preferred Alternative) would not result in major visual impacts. No avoidance, minimization, and/or mitigation measures would be required.

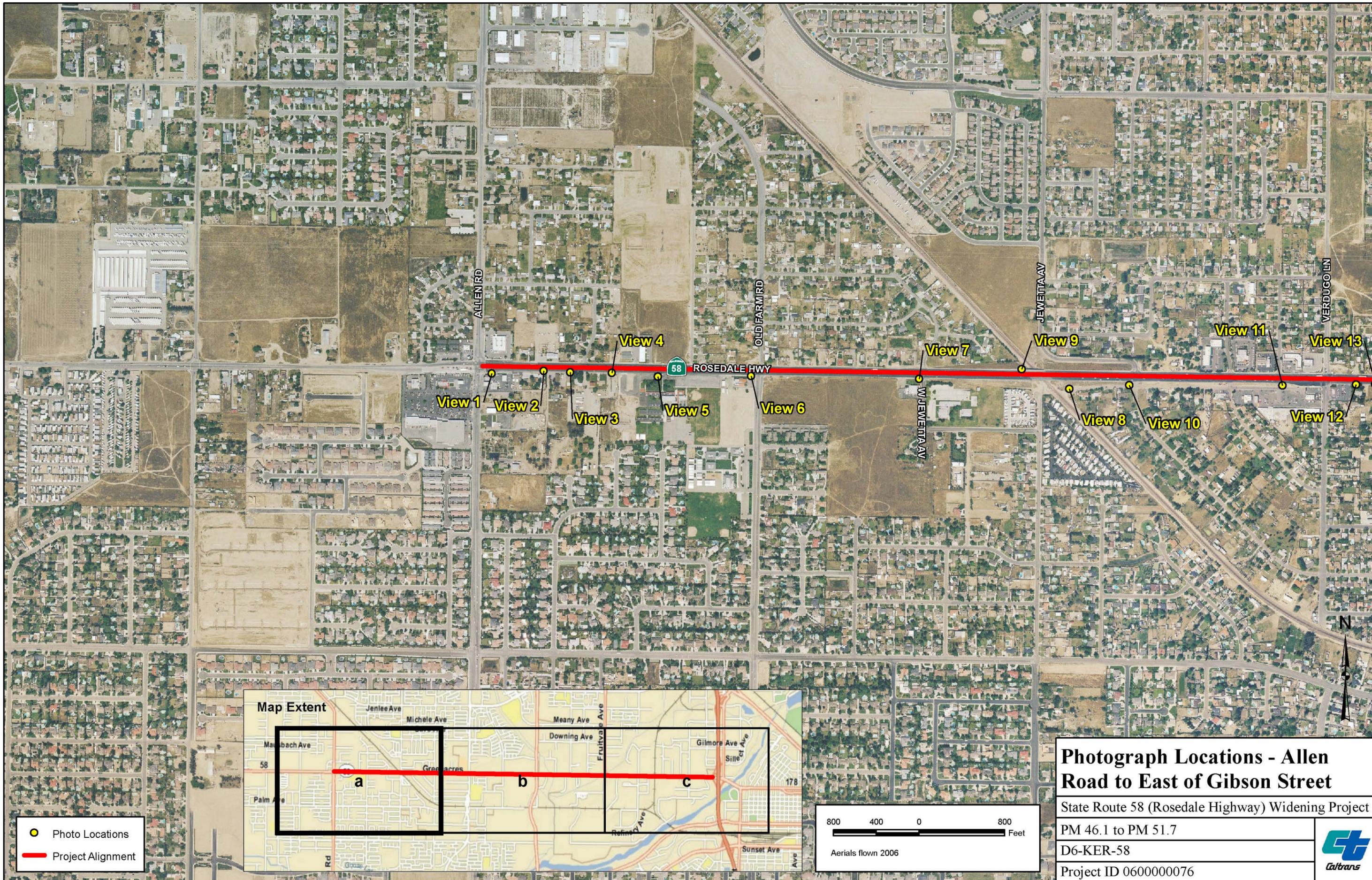


Figure 2-5a

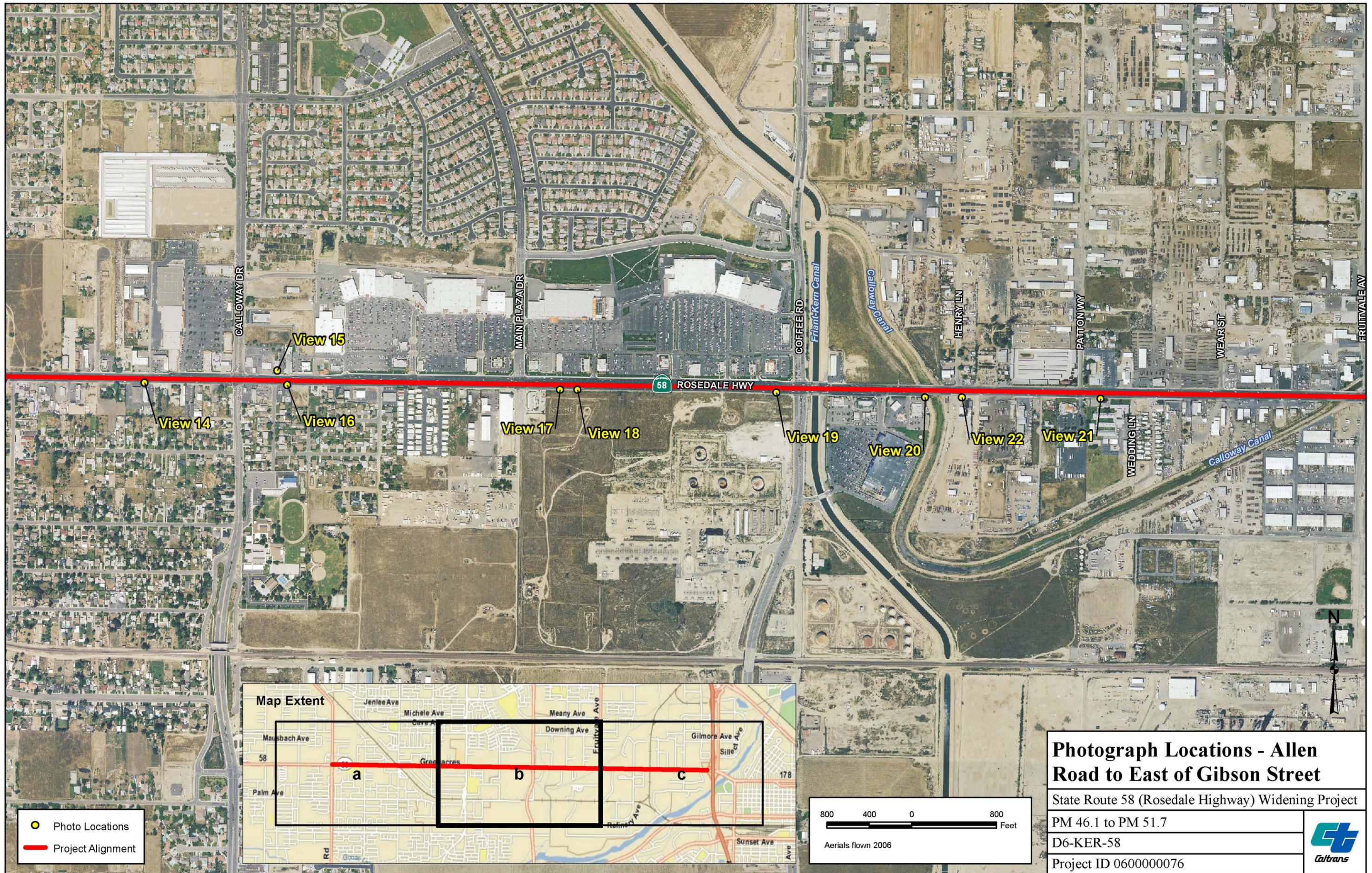
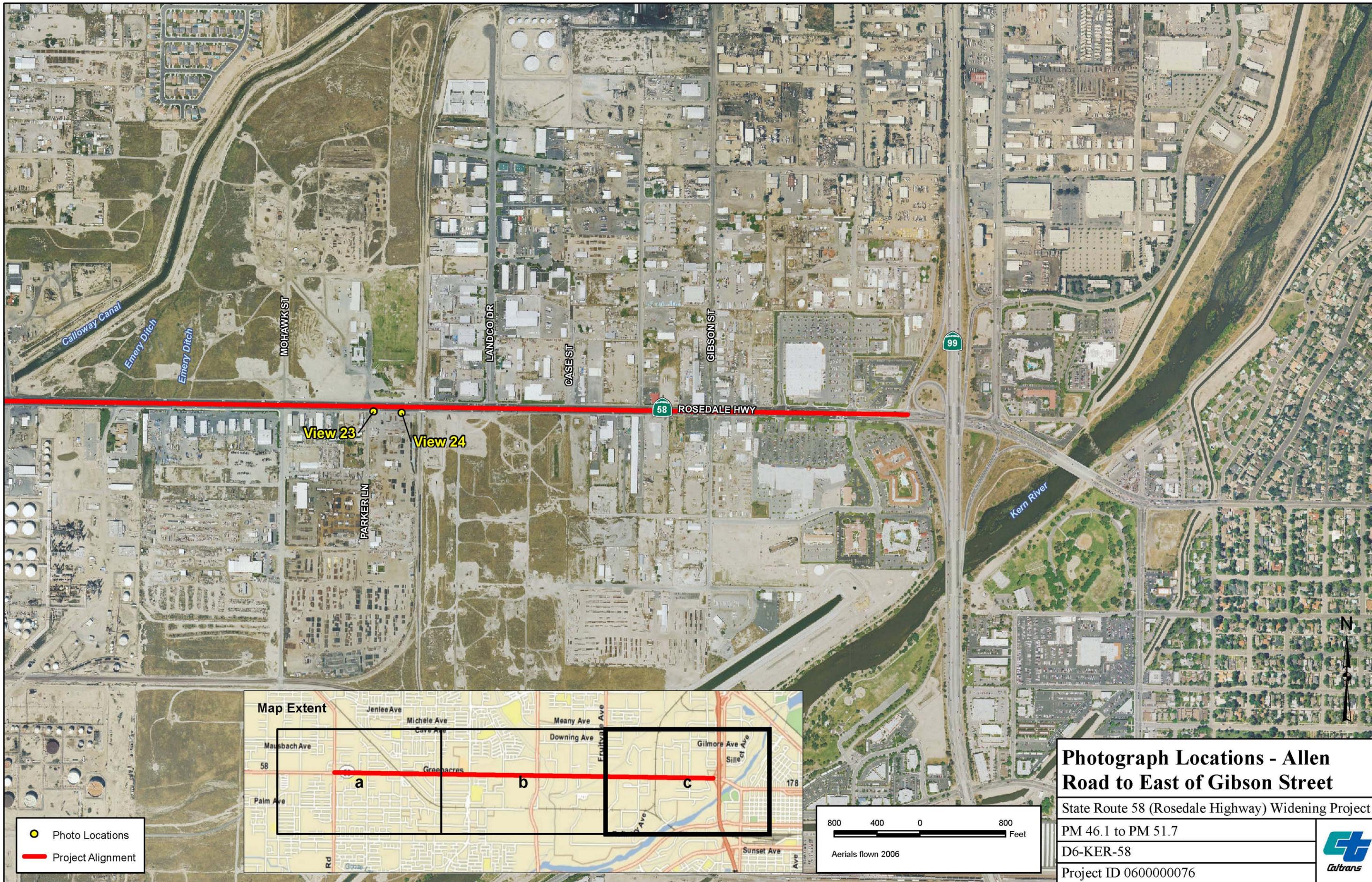


Figure 2-5b



- Photo Locations
- Project Alignment

Photograph Locations - Allen Road to East of Gibson Street
 State Route 58 (Rosedale Highway) Widening Project
 PM 46.1 to PM 51.7
 D6-KER-58
 Project ID 0600000076



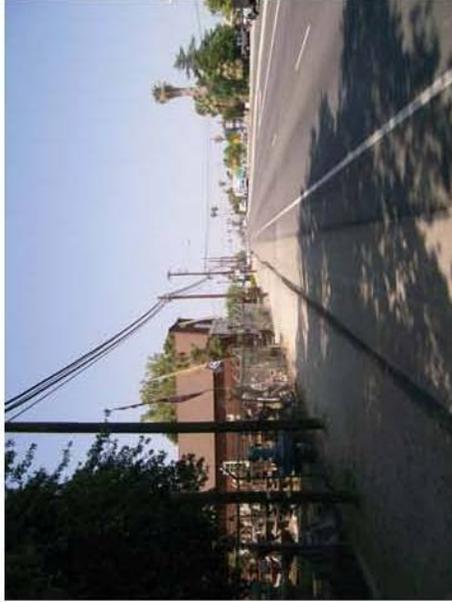
Figure 2-5c



View 1: View from the south side of State Route 58 looking east at commercial uses.



View 2: View from the south side of State Route 58 looking east at residential uses.



View 3: View from the south side of State Route 58 looking west at commercial uses.



View 4: View from the south side of State Route 58 looking northeast at a commercial land use.

**Existing Visual Characteristics -
Allen Road to East of Gibson Street**

State Route 58 (Rosedale Highway) Widening Project

PM 46.1 to PM 51.7

D6-KER-58

Project ID 0600000076





View 5: View from the south side of State Route 58 looking south at a school use.



View 6: Intersection of State Route 58 and Old Farm Road looking east.



View 7: View from State Route 58 and Jewetta Avenue looking east at a church/residential land use.



View 8: Southwest view of OH Rosedale bridge.

Existing Visual Characteristics - Allen Road to East of Gibson Street	
State Route 58 (Rosedale Highway) Widening Project	
PM 46.1 to PM 51.7	
D6-KER-58	
Project ID 0600000076	
	



View 9: View from the north side of State Route 58 looking southeast at a highway median.



View 11: View from the south of State Route 58 looking southeast at a commercial land use.



View 10: View from the south side of State Route 58 and Enger Street looking west at residential uses.



View 12: View from the south side of State Route 58 looking west at commercial land uses.

Existing Visual Characteristics - Allen Road to East of Gibson Street

State Route 58 (Rosedale Highway) Widening Project

PM 46.1 to PM 51.7

D6-KER-58

Project ID 0600000076





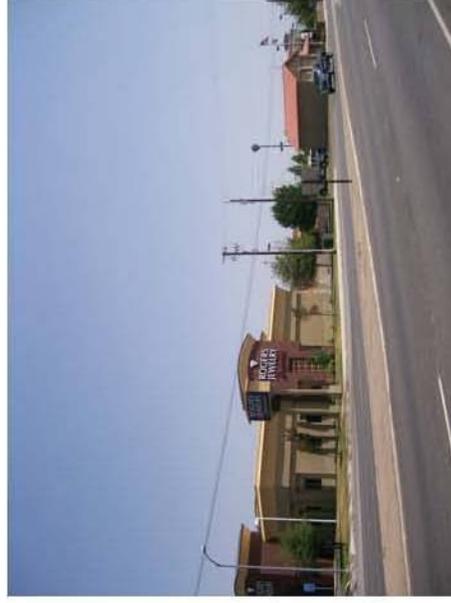
View 13: View from the south side of State Route 58 looking east at commercial land uses.



View 15: View from the north side of State Route 58 looking west at commercial land uses.



View 14: View from the south side of State Route 58 looking west at a residential (church and commercial) use.



View 16: View from the south side of State Route 58 looking northeast at commercial land uses.

Existing Visual Characteristics - Allen Road to East of Gibson Street	
State Route 58 (Rosedale Highway) Widening Project	
PM 46.1 to PM 51.7	
D6-KER-58	
Project ID 0600000076	



Figure 2-6d



View 17: View from the south side of State Route 58 looking west at a commercial land use.



View 19: View from the south side of State Route 58 looking south at a Pacific Gas & Electric power plant.



View 18: View from the south side of State Route 58 looking east at commercial land uses/transmission lines.



View 20: View from the south side of State Route 58 looking northeast at the Callaway Bridge.

**Existing Visual Characteristics -
Allen Road to East of Gibson Street**

State Route 58 (Rosedale Highway) Widening Project	
PM 46.1 to PM 51.7	
D6-KER-58	
Project ID 0600000076	



View 21: View from the south side of State Route 58 looking south at a school use.



View 22: View from the south side of State Route 58 looking west at the Callaway Bridge.



View 23: View from State Route 58 looking east towards the San Joaquin Valley railroad crossing.



View 24: View from State Route 58 looking east towards the San Joaquin Valley railroad crossing.

**Existing Visual Characteristics -
Allen Road to East of Gibson Street**

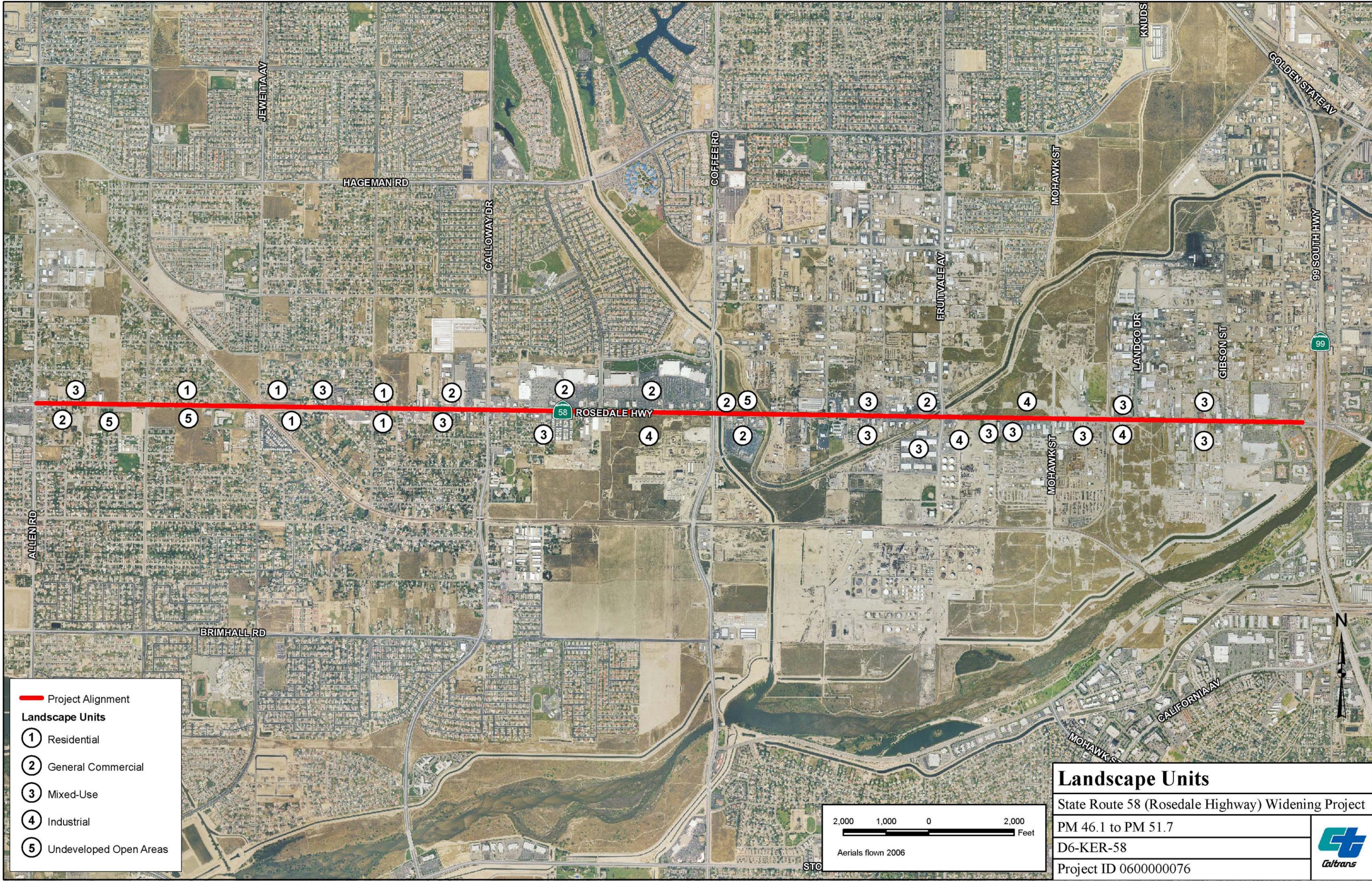
State Route 58 (Rosedale Highway) Widening Project

PM 46.1 to PM 51.7

D6-KER-58

Project ID 0600000076





Project Alignment

Landscape Units

- ① Residential
- ② General Commercial
- ③ Mixed-Use
- ④ Industrial
- ⑤ Undeveloped Open Areas

2,000 1,000 0 2,000
 Feet
 Aerials flown 2006

Landscape Units

State Route 58 (Rosedale Highway) Widening Project
 PM 46.1 to PM 51.7
 D6-KER-58
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Figure 2-7



Existing View: Looking west on State Route 58 from Case Street.



Future View (with the proposed grade separation): Looking west on State Route 58 from Case Street.

Grade Separation Visual Simulation

State Route 58 (Rosedale Highway) Widening Project

PM 46.1 to PM 51.7

D6-KER-58

Project ID 0600000076





Existing View: Looking west on State Route 58 from Landco Road.



Future View (with the proposed grade separation): Looking west on State Route 58 from Landco Road.

Grade Separation Visual Simulation

State Route 58 (Rosedale Highway) Widening Project
 PM 46.1 to PM 51.7
 D6-KER-58
 Project ID 060000076



Figure 2-8b

2.1.7 Cultural Resources

Regulatory Setting

The term “cultural resources” as used in this document refers to all “built environment” resources (structures, bridges, railroads, water conveyance systems, etc.), culturally important resources, and archaeological resources (both prehistoric and historic), regardless of significance. Laws and regulations dealing with cultural resources are explained below.

The National Historic Preservation Act of 1966, as amended, sets forth national policy and procedures on historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for the National Register of Historic Places. Section 106 of the National Historic Preservation Act requires federal agencies to take into account the effects of their undertakings on such properties and to allow the Advisory Council on Historic Preservation the opportunity to comment on those undertakings, following regulations issued by the Advisory Council on Historic Preservation (36 Code of Federal Regulations 800).

On January 1, 2004, a Section 106 Programmatic Agreement between the Advisory Council, the Federal Highway Administration, the State Historic Preservation Officer, and Caltrans went into effect for Caltrans projects, both state and local, with Federal Highway Administration involvement. The Programmatic Agreement implements the Advisory Council’s regulations, 36 Code of Federal Regulations 800, streamlining the Section 106 process and delegating certain responsibilities to Caltrans. The Federal Highway Administration’s responsibilities under the Programmatic Agreement have been assigned to Caltrans as part of the Surface Transportation Project Delivery Pilot Program (23 Code of Federal Regulations 327) (July 1, 2007).

Historical resources are considered under the California Environmental Quality Act as well as California Public Resources Code Section 5024.1, which established the California Register of Historical Resources. California Public Resources Code Section 5024 requires state agencies to identify and protect state-owned resources that meet National Register of Historic Places listing criteria. It further specifically requires Caltrans to inventory state-owned structures in its right-of-way.

Affected Environment

The cultural resources studies completed for the project include the *Archaeological Survey Report* (August 2011), *Extended Phase I Report: P-15-013225* (April 2011),

and the *Historic Property Survey Report* (September 2011), which includes a California Historic Bridge Inventory sheet and the *Historical Resources Evaluation Report* (August 2011). Caltrans has determined that no bridges in the Area of Potential Effects are eligible for the National Register of Historic Places.

The project's Area of Potential Effects includes all areas that might be either directly or indirectly affected by the project. For archaeological resources, this was determined to be all area within the proposed right-of-way and a buffer of approximately 10 feet to allow for potential construction impacts. For architectural resources, where no new right-of-way is required or for locations where the buildings, formal landscape, or structural elements (walls, gates, formal landscape gardens, etc.) are more than 100 feet from the proposed right-of-way, the Area of Potential Effects was set as the proposed right-of-way. Where the project requires new right-of-way that contains built resources (buildings or built landscape features) within 100 feet of the proposed right-of-way, the architectural Area of Potential Effects is set to include the entire parcel boundary.

A records search was done at the Southern San Joaquin Valley Information Center at California State University, Bakersfield in May and June 2007. That search included a review of Southern San Joaquin Valley Information Center data maps, historic-period maps, and literature for Kern County. The California Historical Resources Information System directory (dated April 2, 2007) was also reviewed, including a review of historic-period maps, aerial photography, and local and state historical resource lists and directories. In addition, field surveys for cultural resources were done in April and May 2008, March 2009, and June 2009. Study methodology also included sending letters informing interested parties of the project. These letters were sent to area planning agencies, local governments, historical societies, and museums in April 2008.

Coordination with the Native American Heritage Commission was initiated in June 2007 as part of the Thomas Roads Improvement Program. The Native American Heritage Commission subsequently informed Thomas Roads Improvement Program staff via written correspondence dated June 21, 2007 that no Native American cultural resources were identified in the Sacred Lands Files in the project area. Twelve Native American contacts for Kern County were identified, along with 10 other individuals who were subsequently contacted via written correspondence dated July 30, 2007. The contacts were asked whether they were aware of any resources or sensitive location in the project area. Of the 22 groups and individuals

contacted, 3 provided comments that generally consisted of concerns related to potential damage to archaeological sites and offered various recommendations.

The research identified one resource—the Friant-Kern Canal—near the project’s Area of Potential Effects that the Office of Historic Preservation determined eligible for the National Register of Historic Places. However, the project has no potential to affect this historic property, so no further study of historic property is required for this project. The study done for this project determined that no other resources in the Area of Potential Effects are eligible for the National Register of Historic Places.

During the archaeological survey in 2009, a single site was newly identified within the archaeological Area of Potential Effects: site P-15-013225 consists of a low-density scatter of highly fragmented household debris dating to the early 20th century. An Extended Phase I study was completed for this site and concluded there were no intact portions of the site present within the Area of Potential Effects. The site’s boundaries were accordingly revised to reflect these findings, and the site does not extend into the Area of Potential Effects.

Environmental Consequences

Build Alternative (Preferred Alternative)

Architectural Resources

Fifteen properties were formally evaluated for the National Register and California Register and were found not eligible, so the project would have no impact on any architectural resources. It has been determined that the other properties in the Area of Potential Effects, including state-owned resources, meet the criteria for a Section 106 Programmatic Agreement Attachment 4 (Properties Exempt from Evaluation). Therefore, no further evaluation or avoidance, minimization or mitigation measures are required.

Archaeological Resources

The project would not have any impacts on archaeological resources.

No-Build Alternative

The No-Build Alternative would not result in impacts related to historical or archaeological resources.

Avoidance, Minimization, and/or Mitigation Measures

The project design was able to avoid impacts to the Friant-Kern Canal. One Standard Condition would be applicable, but no minimization or mitigation measures would be required.

Standard Condition

SC-3 If cultural materials are discovered during construction, all earth-moving 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 stop in any area or nearby area suspected to overlie remains, and the County Coroner contacted. Pursuant to Public Resources Code Section 5097.98, if the remains are thought to be Native American, the coroner will notify the Resident Engineer, the City of Bakersfield's Public Works Director, and the Native American Heritage Commission, who will then notify the Most Likely Descendent. At this time, the person who discovered the remains will contact the District 6 Environmental Branch so that staff may work with the Most Likely Descendent on the respectful treatment and disposition of the remains. Further provisions of Public Resources Code Section 5097.98 are to be followed as applicable.

2.2 Physical Environment

2.2.1 Hazardous Waste or Materials

Regulatory Setting

Hazardous materials and hazardous wastes are regulated by many state and federal laws. These include not only specific statutes governing hazardous waste, but also a variety of laws regulating air and water quality, human health, and land use.

The main federal laws regulating hazardous wastes/materials are the Resource Conservation and Recovery Act of 1976 and the Comprehensive Environmental Response, Compensation and Liability Act of 1980. The Resource Conservation and Recovery Act provides for "cradle to grave" regulation of hazardous wastes. The purpose of Comprehensive Environmental Response, Compensation and Liability Act, often referred to as Superfund, is to clean up contaminated sites so that public health and welfare are not compromised. 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 12088, Federal Compliance with Pollution Control, mandates that necessary actions be taken to prevent and control environmental pollution when federal activities or federal facilities are involved.

Hazardous waste in California is regulated mainly under the authority of the federal Resource Conservation and Recovery Act of 1976 and the California Health and Safety Code. Other California laws that affect hazardous waste are specific to handling, storage, transportation, disposal, treatment, reduction, cleanup and emergency planning.

Worker health and safety and public safety are key issues when dealing with hazardous materials that may affect human health and the environment. Proper disposal of hazardous material is vital if such material is disturbed during project construction.

Affected Environment

The information in this section is based on an *Initial Site Assessment (ISA) for the Rosedale Highway Widening Project* (June 2011) and the *State Route 58 Widening Project Preliminary Site Investigation Characterization Report* (May 2012).

Numerous gas stations, automotive service shops, oil refineries, and businesses that support the oil and gas industry sit along State Route 58. Materials classified as hazardous are often used in these types of businesses. There are also large open fields on the northern and southern sides of State Route 58 that contain oil wells, above-ground storage tanks, and petroleum pipelines. Hazardous materials are known to occur at the former Pacific Gas and Electric power plant at the southwestern corner of Coffee Road and State Route 58. The plant has been closed since 1985.

Based on information provided by Caltrans, a test for lead in soil was performed within the Caltrans right-of-way. Results indicated that levels of lead in the soil are below the levels identified as hazardous.

Environmental Consequences

Based on the above evaluation process, parcels were ranked on the potential for hazardous materials. The following ranking was used: Rank 1 (known contamination), Rank 2 (suspected contamination), Rank 3 (potential contamination), or No Rank (no potential for contamination).

Build Alternative (Preferred Alternative)

The analysis of potential impacts considers if a site would be a constraint to construction or a concern from a property acquisition perspective. The *Initial Site Assessment* identified two properties within the project study area where there is known contamination on-site (Rank 1 properties). Each of these properties and the extent of the impacts on the project are discussed below.

At the former Pacific Gas and Electric site, regulatory agency records indicate that a plume of petroleum hydrocarbons from the former Sunland Refinery, located to the south, has migrated underneath the former power plant. There is potential groundwater contamination that may extend under the project area. A small amount of right-of-way (3,005 square feet) would be acquired from the former Pacific Gas and Electric parcel. Construction in this location would have a maximum depth of about 5 feet, so groundwater would not be encountered. This site should not be a constraint to construction, but may require more documentation as part of the acquisition process.

Big West Oil, LLC sits at 6451 Rosedale Highway. Numerous companies have owned and operated the refinery over the years. A release of reformate (a product from a petroleum-refinery process) was found in 1987. Remediation (clean-up) began in June of that year and continued until September 1990, recovering approximately 2,750 barrels of reformate. Releases of methyl tertiary butyl ether, better known as MTBE, occurred in March 1999, December 2000, and April 2001, affecting groundwater at three locations at the facility. There are also five gasoline-range organic plumes at the facility at a depth less than 110 feet below ground level. The nearest plume is found about 485 feet south of State Route 58, adjacent to where the site borders Fruitvale Avenue, behind Guinn IRV Construction. An air-sparge system, vapor extraction, and pump-and-treat units are being used for treatment and

containment of contamination. No right-of-way is required from the Big West Oil site. The contamination on this site would not be a concern during construction.

Based on the review of the agency files and regulatory databases, the remaining sites identified by these sources are not expected to have an impact because (1) they are downslope from the subject property or (2) they are not close enough to the project area to have an adverse impact.

To identify issues of potential environmental concern on or adjacent to the project area, a walking survey was conducted of the entire project area.

Rank 2 Parcels are suspected of being contaminated with hazardous wastes or substances. Twelve parcels were Rank 2. Given past or current site activities, these sites are suspected to have impacts to soil and/or groundwater that could potentially affect project construction depending on the final alignment. The Build Alternative (Preferred Alternative) would require acquisition of right-of-way from one of these 12 sites. For most of these sites, the suspected contaminants include petroleum hydrocarbons associated with service station activities. None of the Rank 2 parcels would be a full acquisition when the grade-separation is built.

Twenty-four parcels were identified as Rank 3. Potential contaminants are associated with oil fields, pesticide and herbicide use, equipment and vehicle storage, and other chemical usage. The Build Alternative (Preferred Alternative) would require right-of-way from 10 of these parcels, including full acquisition of one Rank 3 parcel. More detailed information on the sites ranked 1 through 3, as well as location of the sites, is provided in Appendix I.

The rest of the parcels were ranked No Rank, with no potential to affect the project area. However, the historic use of the area next to State Route 58 was predominately agriculture, so the historical usage of pesticides on these parcels is likely. In addition, oil wells have been present, and oil production was also carried out in the vicinity during this timeframe. As a result of these activities, there is the potential for residual hazardous materials on property next to the roadway.

Though the lead level in the soil is classified as non-hazardous, there is some lead in the soil. In addition, some buildings would be impacted with the construction of the grade separation. It is possible that asbestos and lead-based paint may be found in these buildings, especially if they are older buildings. There is the potential that the

relocations of oil or fuel pipelines may expose contaminated soil from previously unknown releases of oil and fuel into the soil.

A Preliminary Site Investigation was prepared in May 2012 for the roadway widening part of the project to better estimate the amount of contaminated soil and to identify the soil-handling method during construction. As part of this effort, soil sampling and testing was done to determine whether suspected contamination is present on the selected parcels as a result of past or current activities on the parcels or surrounding properties.

Sampling extended to the expected depth and width of the ground disturbance for the project construction. It is assumed that roadway widening would require soil disturbance from two to three feet below existing ground surface. Samples from 1.5 to 2 feet below ground surface were analyzed for total extractable petroleum hydrocarbons such as gasoline, benzene, toluene, ethylbenzene, and xylenes (BTEX). Samples from 3.5 to 4 feet below ground surface were analyzed for petroleum hydrocarbons (in the form of motor oil and diesel), gasoline, benzene, toluene, ethylbenzene, xylenes, and volatile organic compounds.

The testing results are summarized as follows:

- Petroleum hydrocarbons such as gasoline were not detected in any samples;
- Benzene, toluene, ethylbenzene, and xylenes compounds were not detected in any samples;
- Volatile organic compounds were not detected in any samples;
- Petroleum hydrocarbons as motor oil and diesel were detected in 13 of the 24 soil samples. Only six samples exceeded 100 milligrams per kilogram of either motor oil or diesel. Only one sample (at 3.5 to 4 feet below ground surface) exceeded 1,000 milligrams per kilogram.

Because permits could not be obtained to access several properties identified as having potential for contamination, additional soil testing will be necessary prior to construction.

No-Build Alternative

Under the No-Build Alternative, there would be no impacts associated with hazardous waste/materials.

Avoidance, Minimization, and/or Mitigation Measures

A number of federal and state regulations address the handling of hazardous materials. These have been identified as standard conditions. In addition, mitigation measures would reduce the potential impacts associated with known or potential contamination within the study area. Based on a preliminary assessment cost to the project for remediation (clean up) of hazardous materials on-site is estimated at about \$426,000 and would be done during construction.

Standard Conditions

SC-4 Prior to construction, the contractor shall develop an approved Health and Safety Contingency Plan in the event that unanticipated/unknown environmental contaminants are encountered during construction. The plan shall be developed to protect workers, to safeguard the environment, and to meet the requirements of Title 8 of the California Code of Regulations, “General Industry Safety Orders – Control of Hazardous Substances.”

The Health and Safety Contingency Plan shall be prepared as a supplement to the contractor’s Site-Specific Health and Safety Plan, which should be prepared to meet the requirements of Title 8, Construction Safety Orders, of the California Code of Regulations.

SC-5 Prior to the demolition of any on-site building, the building shall be screened for lead-based paint. If lead-based paint is identified, it shall be mitigated in accordance with all applicable federal, state, and local regulatory requirements.

SC-6 Prior to the removal of paint from the roadways, the paint shall be screened for lead-based paint. If lead-based paint is identified, it shall be removed in compliance with the appropriate Caltrans Standard Special Provisions.

SC-7 Prior to the demolition of any on-site building, testing for asbestos-containing materials shall be conducted. If the building to be demolished contains asbestos, the contractor shall comply with the National Emissions Standards for Hazardous Air Pollutants regulations as listed in the Code of Federal Regulations (Title 40, Part 61, Subpart M) and the Rules and Regulations of the San Joaquin Valley Air Pollution Control District.

SC-8 Prior to construction, the Construction Contractor shall develop and follow a Lead Compliance Plan. Disposal of lead-based paint shall be done in

compliance with applicable provisions of the California Hazardous Waste Control Act.

Minimization Measures

HZ-1 A Preliminary Site Investigation that includes soil sampling and testing at the parcels subject to acquisition must be done prior to acquisition or during design of the grade separation (whichever comes first). If soil contamination is identified or if hazardous materials are found, the materials will be handled in accordance with the Health and Safety Contingency Plan developed by the contractor. The plan must comply with all applicable federal, state, and local regulatory requirements.

2.2.2 Air Quality

Regulatory Setting

The Federal Clean Air Act as amended in 1990 is the federal law that governs air quality. The California Clean Air Act of 1988 is its companion state law. These laws, and related regulations by the U.S. Environmental Protection Agency and California Air Resources Board, 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. National ambient air quality standards and state ambient air quality standards have been established for six transportation-related criteria pollutants that have been linked to potential health concerns. The criteria pollutants are: carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM, broken down for regulatory purposes into particles of 10 micrometers or smaller – PM₁₀ and particles of 2.5 micrometers and smaller – PM_{2.5}), lead (Pb), and sulfur dioxide (SO₂).

In addition, state standards exist for visibility-reducing particles, sulfates, hydrogen sulfide (H₂S), and vinyl chloride. The national and state standards are set at a level that protects public health with a margin of safety. They are subject to periodic review and revision. Both federal and state 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 and state air quality standards and regulations provide the basic scheme for project-level air quality analysis under the National Environmental Policy Act and the California Environmental Quality Act. In addition to this type of environmental

analysis, a parallel “conformity” requirement under the Federal Clean Air Act also applies.

Federal Clean Air Act Section 176I prohibits the U.S. Department of Transportation and other federal agencies from funding, authorizing, or approving plans, programs or projects that are not first found to conform to State Implementation Plan for achieving the goals of Clean Air Act requirements related to the national ambient air quality standards. “Transportation conformity” takes place on two levels: the regional, or planning and programming, level, and the project level. The project must conform at both levels to be approved. Conformity requirements apply only in nonattainment and “maintenance” (former nonattainment) areas for the national ambient air quality standards, and only for the specific national ambient air quality standards that are or were violated. U.S. Environmental Protection Agency regulations at 40 Code of Federal Regulations 93 govern the conformity process.

Regional conformity is concerned with how well the regional transportation system supports plans for attaining the standards set for carbon monoxide (CO), nitrogen dioxide (NO₂), ozone (O₃), particulate matter (PM₁₀ and PM_{2.5}), and in some areas sulfur dioxide (SO₂). California has attainment or maintenance areas for all of these transportation-related “criteria pollutants” except sulfur dioxide, and also has a nonattainment area for lead (Pb). However, lead is not currently required by the Federal Clean Air Act to be covered in transportation conformity analysis.

Regional conformity is based on Regional Transportation Plans and Federal Transportation Improvement Programs that include all of the transportation projects planned for a region over a period of at least 20 years (for the Regional Transportation Plan) and 4 years (for the Federal Transportation Improvement Program). Regional Transportation Plan and Federal Transportation Improvement Program conformity is based on use of travel demand and air quality models to determine whether or not the implementation of those projects would conform to emission budgets or other tests showing that requirements of the Clean Air Act and the State Implementation Plan are met.

If the conformity analysis is successful, the Metropolitan Planning Organization, Federal Highway Administration, and Federal Transit Administration, make determinations that the Regional Transportation Plan and Federal Transportation Improvement Program are in conformity with the State Implementation Plan for achieving the goals of the Federal Clean Air Act. Otherwise, the projects in the

Regional Transportation Plan and/or Federal Transportation Improvement Program must be changed 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 Regional Transportation Plan and Federal Transportation Improvement Program, then the project is deemed to meet regional conformity requirements for purposes of project-level analysis.

Conformity at the project-level also requires “hot spot” analysis if an area is in nonattainment or maintenance for carbon monoxide and/or particulate matter (PM₁₀ or PM_{2.5}). A region is in nonattainment if one or more of the monitoring stations in the region measures violation of the relevant standard and U.S. Environmental Protection Agency officially designates the area as a nonattainment area. Areas that were previously designated as nonattainment areas but subsequently meet the standard may be officially redesignated to attainment by the U.S. Environmental Protection Agency. They are then called maintenance areas.

Hot spot analysis is essentially the same, for technical purposes, as carbon monoxide or particulate matter analysis performed for National Environmental Policy Act 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 carbon monoxide or particulate matter violation is found in the project vicinity, the project must include measures to reduce or eliminate the existing violation(s) as well.

Affected Environment

Information presented in this section is based on the State Route 58 Widening Project Air Quality Study Report (June 2011) and the Air Quality Conformity Analysis (April 2012).

Regional Climate and Topography

The project lies in the valley portion of Kern County, which is within the San Joaquin Valley Air Basin. The terrain is flat. The Coast Ranges separate the study area from the ocean’s influence. The climate in Bakersfield ranges from hot, dry summers to cooler winters, where temperatures below freezing are common. The wind in the summer is thermally driven by rising air in the Mojave Desert. Wind flow becomes northwesterly and flows down the valley, through the Tehachapi pass, and into the Mojave Desert.

The basin area is characterized by temperature inversions, which have a direct effect on the dispersion rate of air pollutants. During the summer months, the inversion periods can augment the formation of ozone. In the winter months, steep inversion layers typically set up after the passage of a cold front, forming what is commonly referred to as Tule fog, which can cause a buildup of particulates or carbon monoxide. In addition, cars and trucks emit more carbon monoxide in cool temperatures than in warm temperatures.

Attainment Status

The state and federal ambient air quality standards and attainment status are shown in Table 2.14. The basin is currently designated as a nonattainment area for ozone and particulate matter equal to or less than 2.5 microns in diameter (PM_{2.5}) and as a maintenance area for carbon monoxide and particulate matter equal to or less than 10 microns in diameter (PM₁₀) under federal air quality standards. On September 7, 2011, the U.S. Environmental Protection Agency proposed to approve the San Joaquin Valley 8-hour Ozone Air Quality Plan. As stated in the formal proposal, “[U.S. Environmental Protection Agency] is proposing to approve state implementation plan (SIP) revisions submitted by California to provide for attainment of the 1997 8-hour ozone national ambient air quality standards in the San Joaquin Valley (SJV). These [state implementation plan] revisions are the 2007 Ozone Plan (revised 2008 and 2011) and [San Joaquin Valley]-related portions of the 2007 State Strategy (revised 2009 and 2011” (<http://www.epa.gov/region9/air/actions/ca.html#sjv>).

Table 2.14 State and Federal Criteria Air Pollutant Standards, Effects, and Sources

Pollutant	Averaging Time	State ⁹ Standard	Federal ⁹ Standard	Principal Health and Atmospheric Effects	Typical Sources	Attainment Status
Ozone (O ₃) ²	1 hour 8 hours 8 hours (conformity process ⁵)	0.09 ppm 0.070 ppm —	— ⁴ 0.075 pp m ⁶ 0.08 ppm (4 th 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 Volatile Organic Compounds may also contribute.	Low-altitude ozone is almost entirely formed from reactive organic gases/volatile organic compounds and nitrogen oxides (Nox) in the presence of sunlight and heat. Major sources include motor vehicles and other mobile sources, solvent evaporation, and industrial and other combustion processes.	Federal: Non-Attainment State: Non-Attainment

Chapter 2 • Affected Environment, Environmental Consequences,
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Pollutant	Averaging Time	State ⁹ Standard	Federal ⁹ Standard	Principal Health and Atmospheric Effects	Typical Sources	Attainment Status
Carbon Monoxide (CO)	1 hour 8 hours 8 hours (Lake Tahoe)	20 <u>ppm</u> 9.0 <u>ppm</u> ¹ 6 <u>ppm</u>	35 <u>ppm</u> 9 <u>ppm</u> —	Carbon monoxide interferes with the transfer of oxygen to the blood and deprives sensitive tissues of oxygen. Carbon monoxide also is a minor precursor for photochemical ozone.	Combustion sources, especially gasoline-powered engines and motor vehicles. Carbon monoxide is the traditional signature pollutant for on-road mobile sources at the local and neighborhood scale.	Federal: Maintenance Area State: Attainment Area
Respirable Particulate Matter (PM10) ²	24 hours Annual	50 <u>µg/m³</u> 20 <u>µg/m³</u>	150 <u>µg/m³</u> — ²	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 aerosol and solid compounds are part of PM10.	Dust- and fume-producing industrial and agricultural operations; combustion smoke; atmospheric chemical reactions; construction and other dust-producing activities; unpaved road dust and re-entrained paved road dust; natural sources (wind-blown dust, ocean spray).	Federal: Maintenance Area State: Non-Attainment
Fine Particulate Matter (PM2.5) ²	24 hours Annual 24 hours (conformity process ⁵)	12 <u>µg/m³</u>	35 <u>µg/m³</u> 15.0 <u>µg/m³</u> 65 <u>µg/m³</u> (4 th highest in 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 PM2.5 size range. Many aerosol and solid compounds are part of PM2.5.	Combustion including motor vehicles, other mobile sources, and industrial activities; residential and agricultural burning; also formed through atmospheric chemical (including photochemical) reactions involving other pollutants including nitrogen oxides, sulfur oxides, ammonia, and reactive organic gases.	Federal: Non-Attainment State: Non-Attainment
Nitrogen Dioxide (NO ₂)	1 hour Annual	0.18 <u>ppm</u> 0.030 <u>ppm</u>	0.100 <u>ppm</u> ⁷ (98 th percentile over 3 years) 0.053 <u>ppm</u>	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown. Contributes to acid rain. Part of the “nitrogen oxides” group of ozone precursors.	Motor vehicles and other mobile sources; refineries; industrial operations.	Federal: Attainment State: Attainment
Sulfur Dioxide (SO ₂)	1 hour 0 ours 24 hours Annual	0.25 <u>ppm</u> — 0.04 <u>ppm</u> —	0.075 <u>ppm</u> ⁸ (98 th percentile over 3 years) 0.5 <u>ppm</u> 0.14 <u>ppm</u> 0.030 <u>ppm</u>	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

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Pollutant	Averaging Time	State ⁹ Standard	Federal ⁹ Standard	Principal Health and Atmospheric Effects	Typical Sources	Attainment Status
Lead (Pb) ³	Monthly Quarterly Rolling 3-month average	1.5 $\mu\text{g}/\text{m}^3$ — —	— 1.5 $\mu\text{g}/\text{m}^3$ 0.15 $\mu\text{g}/\text{m}^3$	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 gasoline may exist in soils along major roads.	Federal: Attainment State: Attainment
Sulfate	24 hours	25 $\mu\text{g}/\text{m}^3$	—	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.	State Only: Attainment (entire state)
Hydrogen Sulfide (H ₂ S)	1 hour	0.03 ppm	—	Colorless, flammable, poisonous. Respiratory irritant. Neurological damage and premature death. Headache, nausea.	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.	State Only: Unclassified
Visibility Reducing Particles (VRP)	8 hours	Visibility of 10 miles or more (Tahoe: 30 miles) at relative humidity less than 70%	—	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.	State Only: Unclassified
Vinyl Chloride ³	24 hours	0.01 ppm	—	Neurological effects, liver damage, cancer. Also considered a toxic air contaminant.	Industrial processes	State Only: Unclassified (entire state)

ppm: parts per million; $\mu\text{g}/\text{m}^3$: micrograms per cubic meter; PM10: respirable particulate matter; PM2.5: fine particulate matter

¹ Rounding to an integer value is not allowed for the State 8-hour carbon monoxide standard. Violation occurs at or above 9.05 ppm. Violation of the Federal standard occurs at 9.5 ppm due to integer rounding.

² Annual PM10 National Ambient Air Quality Standard revoked October 2006; was 50 $\mu\text{g}/\text{m}^3$. 24-hr. PM2.5 National Ambient Air Quality Standard tightened October 2006; was 65 $\mu\text{g}/\text{m}^3$. In 9/09 U.S. Environmental Protection Agency began reconsidering the PM2.5 National Ambient Air Quality Standard; the 2006 action was partially vacated by a court decision.

³ The California Air Resources Board has identified vinyl chloride and the particulate matter fraction of diesel exhaust as toxic air contaminants. Diesel exhaust particulate matter is part of PM10 and, in larger proportion, PM2.5. Both the California Air Resources Board and U.S. Environmental Protection Agency have identified lead and various organic compounds that are precursors to ozone and PM2.5 as toxic air contaminants. There are no exposure criteria for adverse health effect 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. Lead National Ambient Air Quality Standards are not required to be considered in Transportation Conformity analysis.

⁴ Prior to June 2005, the 1-hour National Ambient Air Quality Standard was 0.12 parts per million. The 1-hour National Ambient Air Quality Standard is still used only in 8-hour ozone early action compact areas, of which there are none in California. However, emission budgets for 1-hour ozone may still be in use in some areas where 8-hour ozone emission budgets have not been developed.

⁵ The 65 $\mu\text{g}/\text{m}^3$ PM2.5 (24-hour) National Ambient Air Quality Standard was not revoked when the 35 $\mu\text{g}/\text{m}^3$ National Ambient Air Quality Standard was promulgated in 2006. Conformity requirements apply for all National Ambient Air Quality Standards, including revoked National Ambient Air Quality Standards, until emission budgets for the newer National Ambient Air Quality Standards are found adequate or State Implementation Plan amendments for the newer National Ambient Air Quality Standards are completed.

⁶ As of September 16, 2009, U.S. Environmental Protection Agency is reconsidering the 2008 8-hour ozone National Ambient Air

Pollutant	Averaging Time	State ⁹ Standard	Federal ⁹ Standard	Principal Health and Atmospheric Effects	Typical Sources	Attainment Status
						<p>Quality Standard (0.075 parts per million); U.S. Environmental Protection Agency is expected to tighten the primary National Ambient Air Quality Standard to somewhere in the range of 60–70 parts per billion and to add a secondary National Ambient Air Quality Standard. An action has not yet been taken on changing the standard.</p> <p>⁷ Final 1-hour nitrogen dioxide National Ambient Air Quality Standard published in the Federal Register on February 9, 2010, effective March 9, 2010. Initial nonattainment area designations should occur in 2012 with conformity requirements effective in 2013. Project-level hot spot analysis requirements, while not yet required for conformity purposes, are expected.</p> <p>⁸ U.S. Environmental Protection Agency finalized a 1-hour sulfur dioxide standard of 75 parts per billion in June 2010.</p> <p>⁹ State standards are “not to exceed” unless stated otherwise. Federal standards are “not to exceed more than once a year” or as noted above.</p> <p>Source: <i>Air Quality Study Report</i> 2011.</p>

Environmental Consequences

Build Alternative (Preferred Alternative)

Regional Conformity

The Build Alternative (Preferred Alternative) is listed in the Kern Council of Governments 2011 financially constrained Regional Transportation Plan, which was found to conform by the Kern Council of Governments on July 15, 2010, and the Federal Highway Administration and Federal Transit Administration adopted air quality conformity finding on December 14, 2010. The Regional Transportation Plan, Amendment No. 1, was federally approved on June 2, 2011. The roadway improvements are also included in the financially constrained Kern Council of Governments 2011 Federal Transportation Improvement Program, Amendment No. 4, pages 1 and 4. The Kern Council of Governments Regional Transportation Improvement Program was found to conform by the Federal Highway Administration and Federal Transit Administration on December 14, 2010, and Amendment 4 was federally approved on June 2, 2011.

The design concept and scope of the proposed roadway improvements are consistent with the project description in the 2011 Regional Transportation Plan Amendment No. 1 and the 2011 Regional Transportation Improvement Program and the open-to-traffic assumptions in the Kern Council of Governments regional emissions analysis. The time frame for implementation of the grade separation (2025) is consistent with the Regional Transportation Plan, but is beyond the five-year horizon addressed in the 2011 Regional Transportation Improvement Program.

Project-Level Conformity

The basin is currently designated as a nonattainment area for ozone and particulate matter equal to or less than 2.5 microns in diameter (PM_{2.5}) and as a maintenance area for carbon monoxide and particulate matter equal to or less than 10 microns in diameter (PM₁₀) under federal air quality standards. As a requirement for

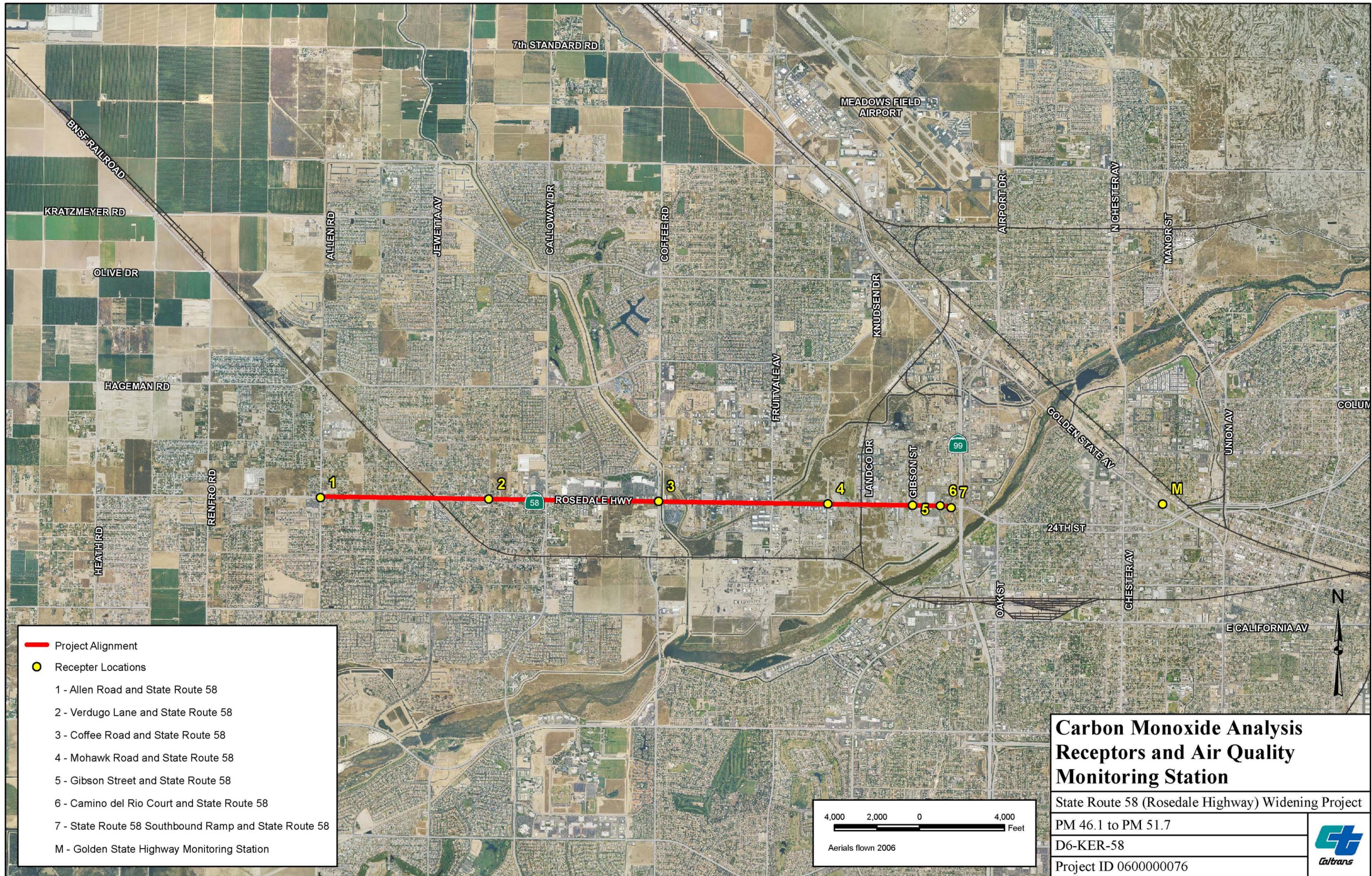
project-level conformity, a carbon monoxide and particulate matter local (hot spot) analysis must be performed to estimate potential air quality impacts generated from the operation of the project. The analysis is presented below. On May 1, 2012 the Federal Highway Administration issued the required air quality conformity determination letter for the State Route 58 (Rosedale Highway) Widening Project (see Appendix O).

Carbon Monoxide Analysis

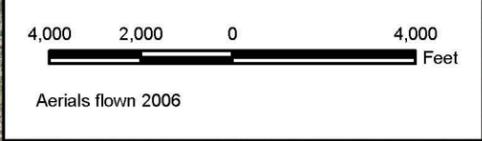
Localized carbon monoxide impacts from the project were evaluated following Caltrans' guidance document, *Transportation Project-Level Carbon Monoxide Protocol* (Caltrans 1997). For this hot spot analysis, carbon monoxide concentrations were predicted at seven intersections with signals in the study area that have the worst traffic levels of service. Figure 2-9 shows the locations of the intersections.

Carbon monoxide concentrations were estimated using the California Air Resources Board's emission factor model, EMFAC2007, and Caltrans' dispersion model, CALINE4, to predict worst-case carbon monoxide concentrations for existing (2007) conditions and no-build conditions, and build conditions for 2015 and 2035. Background carbon monoxide concentrations were taken from the Golden State Monitoring Station, at 1128 Golden State Highway in Bakersfield. The monitoring site is about 3 miles from the project site.

Results of the analysis are shown in Table 2.15. The analysis demonstrates that, for intersections with the highest volume and levels of service, future predicted carbon monoxide concentrations in 2015 are less than existing levels and concentrations in 2035 would be less than in 2015. All predicted concentrations are less than 50 percent of the applicable standards. Reduced concentrations in 2015 and 2035 are due to improved car emissions in future years. Since traffic conditions would improve with the project, localized concentrations of carbon monoxide would be lower because the cars would be traveling at more efficient speeds. A comparison between the future No-Build and Build Alternatives (Preferred Alternative) indicates that, with implementation of the project, carbon monoxide concentrations are expected to remain unchanged or be slightly lower. The project would not contribute to a violation of carbon monoxide standards; therefore, local carbon monoxide project-level transportation conformity requirements would be satisfied.



- Project Alignment
- Receptor Locations
- 1 - Allen Road and State Route 58
- 2 - Verdugo Lane and State Route 58
- 3 - Coffee Road and State Route 58
- 4 - Mohawk Road and State Route 58
- 5 - Gibson Street and State Route 58
- 6 - Camino del Rio Court and State Route 58
- 7 - State Route 58 Southbound Ramp and State Route 58
- M - Golden State Highway Monitoring Station



**Carbon Monoxide Analysis
Receptors and Air Quality
Monitoring Station**

State Route 58 (Rosedale Highway) Widening Project
PM 46.1 to PM 51.7
D6-KER-58
Project ID 0600000076

Figure 2-9

**Table 2.15 Maximum Predicted Carbon Monoxide Concentrations –
(parts per million)**

Intersections	Existing	2015	2015	2035	2035
		No-Build	Build	No-Build	Build
1-hour Carbon Monoxide Concentrations					
State Standard – 20 parts per million					
Federal Standard – 35 parts per million					
Allen Road/State Route 58	5.5	5.0	4.9	4.2	4.2
Verdugo Lane/State Route 58	5.8	4.8	4.6	4.2	4.1
Coffee Road/State Route 58	5.2	5.6	5.4	4.5	4.4
Mohawk Street/State Route 58	6.4	5.7	5.5	4.7	4.6
Gibson Street/State Route 58	6.3	5.5	5.7	4.3	4.3
Camino del Rio/State Route 58	6.7	5.5	5.5	4.4	4.4
State Route 99 Southbound Ramp/State Route 58	7.6	6.0	6.0	4.6	4.6
8-hour Carbon Monoxide Concentrations					
Federal and State Standard – 9 parts per million					
Allen Road/State Route 58	3.9	3.5	3.4	2.9	2.9
Verdugo Lane/State Route 58	4.1	3.4	3.2	2.9	2.9
Coffee Road/State Route 58	3.6	3.9	3.8	3.2	3.1
Mohawk Street/State Route 58	4.5	4.0	3.9	3.3	3.2
Gibson Street/State Route 58	4.4	3.9	4.0	3.0	3.0
Camino del Rio/State Route 58	4.7	3.9	3.9	3.1	3.1
State Route 99 Southbound Ramp/State Route 58	5.3	4.2	4.2	3.2	3.2
* No-Build traffic data was not available at the time of modeling. However, the traffic design team stated that a majority of intersections will have level of service F and similar total traffic volumes to build conditions; therefore, this information was utilized in lieu of mission No-Build data.					
Source: <i>Air Quality Study Report 2011</i> .					

Particulate Matter Analysis

The project lies within a federal nonattainment area for fine particulate matter (PM_{2.5}) and a maintenance area for large particulate matter (PM₁₀). The federal guidance does not require a quantitative hot spot analysis for projects that are not determined to be “projects of air quality concern.” Projects of air quality concern involve large concentrations or increases in volumes of diesel trucks. Generally, to be a project of air quality concern, the average daily traffic count must exceed 125,000 vehicles per day, and the percentage of trucks must exceed 8 percent of average daily traffic. As shown in Table 1.1, in Chapter 1, the project does not have these traffic volumes or truck trips.

In accordance with *EPA Hot Spot Analysis Guidance in PM10 and PM2.5 Nonattainment Areas*, interagency consultation for the project was initiated on July 27,

2011. The agencies involved in the process were asked to provide concurrence that the project was not a project of air quality concern by August 10, 2011. In separate written responses, both the Federal Highway Administration, on August 1, 2011, and the U.S. Environmental Protection Agency, on July 27, 2011, concurred with the finding that State Route 58 Widening Project is not a project of air quality concern. Copies of the concurring emails are provided in Appendix L.

To provide data presented for interagency consultation, an analysis was done. It predicted that particulate matter emissions levels in 2015 would be lower than existing emissions, and particulate matter emission levels in 2035 would be lower than 2015 emissions. In 2015, emissions from the Build Alternative (Preferred Alternative) would be less than emissions under the No-Build Alternative; in 2035, emissions from the Build Alternative (Preferred Alternative) would be the same as emissions under the No-Build Alternative. The project would reduce particulate matter emissions by improving traffic flow and reducing the wait time at intersections with signals.

Other Issues to Consider

Construction Impacts

During construction, short-term degradation of air quality may occur due to the release of particulate emissions (airborne dust) generated by excavation, grading, hauling, and other activities related to construction. Emissions from construction equipment also are anticipated and would include carbon monoxide, nitrogen oxides, volatile organic compounds, directly emitted particulate matter (PM₁₀ and PM_{2.5}), and toxic air contaminants such as diesel exhaust particulate matter.

Construction activities include limited excavation, grading, hauling, and various other activities needed to build the project. These activities would generate short-term increases in particulate matter. Dust and odors at some residences very close to the right-of-way could probably cause occasional annoyance and complaints.

Other individual projects in the basin may be under construction at the same time as the project. Depending on construction schedules and implementation of other projects in the region, fugitive dust and pollutant emissions generated during construction may result in substantial short-term increases in air pollutants. This would contribute to short-term cumulative air quality impacts. However, implementation of dust control measures during site-grading activities, as specified in Standard Conditions SC-8 through SC-11, identified under Avoidance, Minimization and Mitigation Measures, would reduce fugitive dust emissions to a level that is considered minor.

San Joaquin Valley Air Pollution Control District Rule 9510, Indirect Source Review, was established to reduce emissions of ozone precursors and large particulate matter from new development projects. Transportation projects with emissions equal to or greater than 2.0 tons of nitrogen oxides or 2.0 tons of large particulate matter are required to comply with Rule 9510. It is anticipated that more than 2.0 tons per year of nitrogen oxide would be generated during project construction. Therefore, compliance with Indirect Source Rule 9510 would be required.

Naturally Occurring Asbestos and Structural Asbestos

Kern County is not among the counties listed by the Governor's Office of Planning and Research as containing naturally occurring asbestos. Buildings and other improvements built before 1980 have the potential of containing asbestos-containing materials. The demolition of these buildings has the potential of introducing contaminants into the air, soil, or water if residue is not properly handled. If structures that may contain asbestos are to be demolished, the contractor would have to comply with Rules and Regulations of the San Joaquin Valley Air Pollution Control District. This issue is addressed in Section 2.2.1, Hazardous Waste or Materials.

Mobile Source Air Toxics

Mobile source air toxics are hazardous air pollutants, which are a concern for transportation projects. Guidance describing when and how to analyze mobile source air toxics is provided in *Interim Guidance Update on Mobile Source Air Toxic Analysis in NEPA Documents* (Federal Highway Administration 2009). The project would have a low potential for air toxics because it would serve to improve traffic operations.

Since there are three sensitive receptors (ABC Preschool Academy, Rosedale Middle School, and Vista West Continuation School) sitting within 500 feet of the proposed right-of-way that would be affected by the change in mobile source air toxics emission levels, a quantitative emissions analysis was performed. This is done to assess how mobile source air toxics emissions would change between existing, no-build and build conditions. Emissions were calculated using air quality model CT-EMFAC version 2.6. Results are shown in Table 2.16. (Note: Caltrans and University of California, Davis have interpreted the EMFAC 2007 model to provide project-level emission analysis, including emission factors and emissions of mobile source air toxics.)

Table 2.16 Maximum Mobile Source Air Toxics Emissions (pounds)

Pollutant	Existing	2015 No-Build	2015 Build	2035 No-Build	2035 Build
Diesel Particulate Matter	1,351	768	752	314	314
Formaldehyde	370	203	199	93	93
1,3 Butadiene	13	6	6	5	5
Benzene	90	46	45	29	29
Acrolein	2	1	0.9	0.8	0.8
Source: <i>Air Quality Study Report 2011</i> .					

The analysis shows that mobile source air toxics emissions for 2015 no-build conditions would be substantially less than the calculated existing emissions, and mobile source air toxics emissions for the 2015 build scenario would be less than for the no-build scenario. Mobile source air toxics emissions in 2035 would be less than in 2015, with a small difference or no difference between the no-build and build conditions. These emission reductions over time are due to advances in technology and federal and state standards on vehicle emissions.

The U.S. Environmental Protection Agency’s national control programs are projected to reduce annual mobile source air toxics emissions by 72 percent between 1999 and 2050. Local conditions may differ from these national projections in terms of fleet mix and turnover, vehicle miles traveled growth rates, and local control measures. This decrease will reduce the background level of mobile source air toxics as well as the mobile source air toxics emissions from the project. The small changes between no-build and build conditions occur because of very small changes in projected traffic volumes and speeds. As a result, mobile source air toxics impacts are not expected to occur as a result of the project.

No-Build Alternative

Because no improvements would be made, there would be no construction-related air quality impacts. However, without the proposed roadway widening, local air quality would deteriorate due to increased vehicular congestion in the project study area.

Avoidance, Minimization, and/or Mitigation Measures

Standard Conditions

SC-9 The Caltrans Standard Specifications pertaining to dust control and dust palliatives are required to be a part of all construction contracts and should effectively reduce and control construction emissions impacts. The provisions of the Caltrans Standard Specifications (specifically, Section 7-1.0F, “Air

Pollution Control,” and Section 10, “Dust Control”) require the contractor to comply with the San Joaquin Valley Air Pollution Control District rules, ordinances, and regulations.

- SC-10 The San Joaquin Valley Air Pollution Control District’s Rule 8021 (Fugitive Dust) specifies actions or control measures to prevent, reduce, or mitigate particulate matter emissions generated from construction, demolition, excavation, extraction, and other earth-moving activities.
- SC-11 Prior to construction, the contractor shall comply with San Joaquin Valley Air Pollution Control District’s Rule 9510 by filing the appropriate mitigation applications for the construction period. Further, compliance with Rule 9510 will assist in not exceeding the San Joaquin Valley Air Pollution Control District’s oxides of nitrogen thresholds of significance for the duration construction of the project.
- SC-12 The following Best Available Control Measures shall be implemented to minimize the emissions of particulate matter (PM₁₀) and fine particulate matter (PM_{2.5}) during construction:
- Minimize land disturbances
 - Use watering trucks to minimize dust
 - Cover trucks when hauling dirt
 - Put grading and earth moving on hold when wind gusts exceed 25 miles per hour unless the soil is wet enough to prevent dispersion
 - Stabilize the surfaces of dirt piles if they are not removed immediately
 - Sweep nearby paved streets at least once per day if there is evidence of dirt that has been carried onto the roadway
 - Re-vegetate disturbed land as soon as possible
 - Wash trucks off as they leave the construction site if necessary to control fugitive dust emissions
 - Properly tune and maintain construction equipment and vehicles. Low-sulfur fuel shall be used in all construction equipment as provided in California Code of Regulations Title 17, Section 93114.
 - Submit a dust control plan to the San Joaquin Valley Air Pollution Control District before construction begins and document measures needed to minimize construction impacts to the existing community.

- Locate equipment and materials storage sites as far away from residential and park uses as practical.
- Keep construction areas clean and orderly.
- Use track-out reduction measures such as gravel pads at project access points to minimize dust and mud deposits on roads affected by construction traffic.
- Cover all transported loads of soils and wet materials prior to transport, or provide adequate space from the top of the material to the top of the truck to reduce PM₁₀ and deposition of particulate during transportation.
- Remove dust and mud that are deposited on paved public roads due to construction activity and traffic to decrease particulate matter.
- To the extent feasible, route and schedule construction traffic to reduce congestion during peak travel times, and as far as possible from sensitive receptors (homes and schools).
- Install mulch or plant vegetation as soon as practical after grading to reduce windblown particulate in the area.

2.2.3 Noise

Regulatory Setting

The California Environmental Quality Act and the National Environmental Policy Act of 1969 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 the California Environmental Quality Act and the National Environmental Policy Act.

California Environmental Quality Act

The California Environmental Quality Act 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 the California Environmental Quality Act, then the California Environmental Quality Act dictates that mitigation measures must be incorporated into the project unless such measures are not feasible.

National Environmental Policy Act and 23 Code of Federal Regulations 772

For highway transportation projects with Federal Highway Administration (and Caltrans, as assigned) involvement, the Federal-Aid Highway Act of 1970 and the associated implementing regulations (23 Code of Federal Regulations 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 that are used to determine when a noise impact would occur. The noise abatement criteria differ depending on the type of land use under analysis. For example, the noise abatement criteria for residences (67 A-weighted decibels) is lower than the noise abatement criteria for commercial areas (72 A-weighted decibels).

Table 2.17 lists the noise abatement criteria for use in the National Environmental Policy Act 23 Code of Federal Regulations 772 analysis. Figure 2-10 lists the noise levels of common activities.

Table 2.17 Noise Abatement Criteria

Activity Category	Noise Abatement Criteria, Hourly A-Weighted Noise Level, dBA $L_{eq}(h)$	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	67 Exterior	Picnic areas, recreation areas, playgrounds, active sport areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals
C	72 Exterior	Developed lands, properties, or activities not included in Categories A or B above
D	–	Undeveloped lands
E	52 Interior	Residence, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums
dBA: A-weighted decibels $L_{eq}(h)$: sound energy equivalent noise level Source: Noise Study Report 2011.		

In accordance with Caltrans' *Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects, August 2006*, a noise impact occurs when the future noise level with the project results in a substantial increase in noise level (defined as an increase of 12 A-weighted decibels or more) or when the future noise level with the project approaches or exceeds the noise abatement criteria. Approaching the noise abatement criteria is defined as coming within 1 A-weighted decibel of the noise abatement criteria.

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Jet Fly-over at 300m (1000 ft)	110	Rock Band
Gas Lawn Mower at 1 m (3 ft)	100	
Diesel Truck at 15 m (50 ft), at 80 km (50 mph)	90	Food Blender at 1 m (3 ft)
Noisy Urban Area, Daytime	80	Garbage Disposal at 1 m (3 ft)
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		
Quiet Suburban Nighttime	40	Theater, Large Conference Room (Background)
		Library
Quiet Rural Nighttime	30	Bedroom at Night, Concert Hall (Background)
		Broadcast/Recording Studio
	20	
	10	
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

Figure 2-10 Noise Levels of Common Activities

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 A-weighted decibel 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. The reasonableness determination is basically a

cost-benefit analysis. Factors used in determining whether a proposed noise abatement measure is reasonable include: residents' acceptance and the cost per benefited residence, the absolute noise level, build versus existing noise, environmental impacts of abatement, public and local agencies' input, newly built development versus development pre-dating 1978.

Affected Environment

The following is based on the State Route 58 Widening Project Noise Study Report (June 2011) and the Noise Abatement Decision Report (September 2011).

Land uses along State Route 58 vary from low-density residential to heavy commercial and industrial. Land uses are mainly industrial/commercial properties mixed with residential homes, schools, and churches. As presented in Table 2.18, single-family residences, multi-family residences, hotels, and churches were identified as Activity Category B land uses in the project area. The Noise Study Report focuses on areas that are often used by people; these can be defined as outdoor activity areas (such as residential backyards) and common use areas at multi-family residences, among others.

The main noise source that affects the properties in the study area is traffic on State Route 58. Except for the overpass that spans from Lone Oak Drive to Enger Street, the project area is generally flat. Several properties throughout the project area have access points for driveways and local cross streets that face State Route 58.

A field study was done to identify land uses that could be subject to traffic and construction noise impacts from the project. Most of the short-term measurement sites were residential properties identified within the project area. Field measurements were also performed at a number of residential land use areas next to State Route 58. These locations include apartments, mobile home parks and single-family residential homes. During the field measurements, State Route 58 was the dominant noise source. A few of the locations have privacy walls that vary in height from 3 to 6 feet. Existing noise levels for most of the first-row homes approach or exceed the noise abatement criteria. Additional modeled receivers were added in the project area to further capture noise levels at second- and third-row residential areas.

Three schools and a church also sit in the project area: ABC Preschool Academy, Rosedale Middle School, Vista West Continuation High School, and Grace Baptist Church. Interior and exterior measurements were taken at the same time at all of the schools in the project area. No walls shield the school receivers from noise generated

from traffic on State Route 58. All existing noise levels at outdoor frequent human use areas for the schools next to State Route 58 exceed the noise abatement criteria.

Figures showing the noise monitoring locations, the modeled receptors, existing and proposed noise barrier locations, and land uses are provided in Appendix J (Figures J-1 through J-11). Table 2.18 shows the results of the short-term noise monitoring. The locations represent the frequent outdoor use areas in the study area.

Table 2.18 Summary of Short-Term Measurements

Receiver Identification Number	Address	Land Uses	Date/Start Time	Duration (Minutes)	Measured L_{eq} (dBA)
CH-02	2550 Jewetta Avenue Bakersfield, CA 93312	Church	11/7/2008 9:10 a.m.	20	60.9
SCH-01 INT	12463 Rosedale Highway Bakersfield, CA 93312	School	11/6/2008 10:00 a.m.	20	50.3
SCH-02-EXT					58.1
SCH-03 INT	12438 Rosedale Highway Bakersfield, CA 93312	School	11/6/2008 10:40 a.m.	20	46.2
SCH-03 EXT					67.0
SCH-04 INT	7115 Rosedale Highway Bakersfield, CA 93308	School	11/6/2008 3:10 p.m.	20	46.5
SCH-04 EXT					55.0
SCH-04 ST					11/6/2008 3:30 p.m.
ST-11	11828 Rosedale Highway Bakersfield, CA 93312	Residential	11/19/2008 2:50 p.m.	20	56.8
ST-12	9131 Rosedale Highway Bakersfield, CA 93312	Residential	11/7/2008 8:50 a.m.	20	64.9
ST-13	9811 Rosedale Highway Bakersfield, CA 93312	Residential	11/7/2008 12:30 p.m.	20	51.5
ST-15	2500 Jewetta Avenue, Unit 47 Bakersfield, CA 93312	Residential	11/20/2008 9:25 a.m.	20	55.8
L_{eq} : Sound Energy Equivalent Noise Level dBA: A-weighted decibels Source: Noise Study Report 2011.					

One long-term measurement was taken to get the hourly traffic noise pattern throughout a day (24-hour period). The long-term monitoring site (10809 Rosedale Highway, Bakersfield, California 93312) had an average loudest-hour sound level measurement of 68 A-weighted decibels on the Sound Energy Equivalent Noise Level between the hours of 2:00 p.m. and 6:00 p.m.

Environmental Consequences under the National Environmental Policy Act

Build Alternative (Preferred Alternative)

The project is a Type 1 improvement because it is a federal-aid project that provides additional through lanes.

Temporary Construction-Related Noise

Two types of short-term noise impacts would occur during construction. The first type would be from construction crew commutes and the transport of construction equipment and materials to the project site; this type of construction noise would raise noise levels on access roads leading to the site. Construction trucks passing within 50 feet would result in as high as an 87 A-weighted decibels noise level. This would be the high single-event noise level (only happen when the trucks go by), and the project construction traffic would still be much less than existing traffic volumes on State Route 58 and other affected streets. Therefore, short-term, construction-related worker commutes and equipment transport noise impacts would not be substantial.

The second type of short-term noise impact is related to noise that would be created during roadway construction. Typical noise levels at 50 feet from an active construction area are as high as 91 A-weighted decibels during the noisiest construction phases. The site-preparation phase, which includes grading and paving, tends to produce the highest noise levels because the noisiest construction equipment is earth-moving equipment. The worst-case noise level at the nearest residence during this phase of construction would be a maximum 91 A-weighted decibels (at a distance of 50 feet from a construction area).

In addition to the standard equipment, at the bridge locations, use of pile drivers may be necessary. If pile-driving occurs at the same time as site-preparation activities, construction could produce noise levels of a maximum of 95 A-weighted decibels at 50 feet from the project construction areas. The two locations where pile driving may occur (the widening of the Calloway Bridge and the proposed grade separation) are not next to noise sensitive uses, and impacts from pile-driving would not result in impacts to sensitive receptors. Pile driving would not be necessary at the existing grade separation at the BNSF Railway.

Future Exterior Noise Environment, Impacts, and Considered Abatement

To predict traffic noise levels, the Federal Highway Administration Traffic Noise Model Version 2.5 (TNM 2.5) is used. The noise readings taken at representative

locations (see Table 2.18) were used to calibrate the noise model for this project. Traffic noise impacts are considered to occur at receiver locations where predicted design-year noise levels are at least 12 decibels greater than existing noise levels, or where estimated design-year noise levels approach or exceed the noise abatement criteria for the applicable activity category presented in Figure 2-10. Where traffic noise impacts are identified, noise abatement (such as building soundwalls to reduce noise levels) is considered. Noise abatement must be considered for “feasibility” and “reasonableness,” as required by the Code of Federal Regulations and the Caltrans’ *Traffic Noise Analysis Protocol*.

Table 2.19 summarizes the traffic noise modeling results for the baseline (2007), 2035 (design year) No-Build Alternative, and 2035 Build Alternative conditions. The comparison to existing conditions is included in the analysis to identify traffic noise impacts. The comparison of the Build and No-Build conditions indicates the direct effect of the proposed improvements. The Noise Study Report identifies 14 locations where noise barriers should be evaluated because the future noise conditions would approach (within 1 A-weighted decibel) or exceed the noise abatement criteria. At each location, six noise barrier heights—6, 8, 10, 12, 14, and 16 feet—were analyzed.

According to Caltrans procedures, abatement measures are considered acoustically feasible if they would provide a minimum noise reduction of 5 decibels at affected receiver locations. Other factors that affect feasibility include topography, access requirements, conflicts with utilities, other noise sources in the area, and safety considerations. As noted earlier, 14 locations were evaluated for feasibility based on achieving a minimum 5-decibel noise reduction.

The reasonableness of noise abatement (for each noise barrier found to be acoustically feasible) must then be determined, based on the cost allowance calculation procedure identified in the *Caltrans Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects*. A soundwall would be considered reasonable if it costs less than the reasonable allowance for that barrier (described in more detail in Appendix C of the *State Route 58 Widening Project Noise Study Report*). The preliminary determination of reasonableness is shown in Table 2.20.

Table 2.19 Predicted Traffic Noise Levels

Receptor Identification Number	Location	Barrier Identification Number	Existing Noise Level (dBA)	Predicted Noise Level without Project (dBA)	Predicted Noise Level with Project (dBA)	Noise Impact Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)						Reasonable and Feasible
							6-foot wall	8-foot wall	10-foot wall	12-foot wall	14-foot wall	16-foot wall	
M-100	2601 Maher Way	Barrier 01	70	70	70	Yes	^b	69	69	68	68	68	No
M-101	2609 Maher Way		67	67	67	Yes	^b	67	67	67	67	67	No
M-102	2617 Maher Way		64	64	65	No	^b	65	65	64	64	64	N/A
M-161	2600 Maher Way	Barrier 02 ^a	72	73	73	Yes	69	68	67	66	65	65	Yes
SCH-03 EXT	12438 Rosedale Highway		72	73	73	Yes	69	68	67	65	65	64	Yes
M-105	2616 Maher Way		67	67	69	Yes	65	65	65	63	63	63	Yes
M-104	2700 Maher Way		64	64	65	No	63	62	62	61	61	61	N/A
M-106	12463 Rosedale Highway	Barriers 03 and 04	69	70	70	Yes	67	67	67	66	66	66	No
SCH-02 EXT	12463 Rosedale Highway		69	69	70	Yes	67	67	67	66	66	66	No
M-107	12463 Rosedale Highway		70	70	70	Yes	67	67	67	66	66	66	No
M-110	2600 Lassen Drive	Barrier 05	70	70	70	Yes	^b	69	69	67	67	67	No
M-109	2606 Lassen Drive		68	68	68	Yes	^b	67	67	67	67	66	No
M-111	12150 Rosedale Highway		64	64	64	No	^b	64	64	63	62	62	N/A
M-108	2612 Lassen Drive		64	64	65	No	^b	65	65	65	64	64	N/A
M-113	12038 Rosedale Highway	Barrier 06	71	72	72	Yes	70	69	68	67	66	66	No
M-177	2600 Lone Oak Drive	Barrier 07	65	66	68	Yes	64	63	62	61	59	58	No
M-117	11507 Mockingbird Court		64	65	67	Yes	63	63	61	60	59	59	No
M-163	11501 Mockingbird Court		63	64	66	Yes	63	62	60	59	59	59	N/A
M-116	2700 Lone Oak Drive		60	61	62	No	60	60	60	59	58	58	N/A

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Receptor Identification Number	Location	Barrier Identification Number	Existing Noise Level (dBA)	Predicted Noise Level without Project (dBA)	Predicted Noise Level with Project (dBA)	Noise Impact Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)						Reasonable and Feasible
							6-foot wall	8-foot wall	10-foot wall	12-foot wall	14-foot wall	16-foot wall	
CH-02	2550 Jewetta Avenue	Barrier 08	64	66	68	Yes	65	65	65	64	63	63	No
M-164	2550 Jewetta Avenue		63	64	66	Yes	63	63	62	59	59	58	No
M-118	2555 Jewetta Avenue		64	65	66	Yes	62	60	59	58	58	57	No
M-165	2555 Jewetta Avenue		64	65	66	Yes	61	59	59	58	57	57	No
M-166	2555 Jewetta Avenue		64	64	66	Yes	64	60	59	59	58	58	No
M-168	2555 Jewetta Avenue		64	64	66	Yes	63	60	59	58	58	57	No
M-167	2555 Jewetta Avenue		63	64	66	Yes	64	60	59	59	58	58	No
M-169	2555 Jewetta Avenue		63	64	66	Yes	63	60	59	58	58	57	No
ST-15	2500 Jewetta Avenue, Unit 47		63	64	66	Yes	63	60	59	58	58	58	No
M-122	11025 Rosedale Highway		60	60	62	No	60	59	58	57	57	57	No
M-125	11001 Rosedale Highway		66	67	68	Yes	68	68	68	68	68	67	No
M-119	2500 Jewetta Avenue		61	62	64	No	61	60	59	57	56	56	No
M-121	2500 Jewetta Avenue		59	60	61	No	58	58	57	55	55	55	No
M-126	11019 Enger Street		62	62	63	No	63	62	62	62	61	61	No
M-127	11013 Enger Street		60	61	61	No	61	60	60	60	60	59	No
M-173	10917 Rosedale Highway	Barrier 09	64	65	66	Yes	63	63	62	62	61	61	No
M-179	10905 Rosedale Highway		63	64	65	No	62	61	61	60	59	58	No
M-174	10809 Rosedale Highway		64	65	66	Yes	64	64	63	63	63	63	No
M-171	11117 Aimee Way	Barrier 10	65	66	66	Yes	65	65	65	65	64	63	No
M-124	11101 Aimee Way		66	66	66	Yes	64	63	62	62	62	62	No
M-172	11009 Aimee Way		68	69	69	Yes	67	65	63	62	61	61	No

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Receptor Identification Number	Location	Barrier Identification Number	Existing Noise Level (dBA)	Predicted Noise Level without Project (dBA)	Predicted Noise Level with Project (dBA)	Noise Impact Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)						Reasonable and Feasible	
							6-foot wall	8-foot wall	10-foot wall	12-foot wall	14-foot wall	16-foot wall		
M-137	2400 Verdugo Lane	Barrier 11	67	67	68	Yes	64	63	62	62	62	62	Yes	
M-138	2400 Verdugo Lane		65	66	66	Yes	65	64	64	63	63	63	Yes	
M-139	2610 Verdugo Lane	Barrier 12	68	68	69	Yes	65	62	61	60	58	58	No	
M-175	9131 Rosedale Highway	Barriers 13 and 14	73	75	76	Yes	72	69	67	65	64	63	No	
ST-12	9131 Rosedale Highway		74	76	77	Yes	72	71	68	67	67	66	No	
M-186	9131 Rosedale Highway		67	68	70	Yes	68	67	66	65	64	64	No	
M-159	9131 Rosedale Highway		68	69	71	Yes	69	69	68	68	67	67	No	
M-187	9131 Rosedale Highway		67	68	69	Yes	68	67	67	66	65	65	No	
M-181	9131 Rosedale Highway		64	65	67	Yes	65	65	64	64	63	63	No	
M-180	9131 Rosedale Highway		65	67	68	Yes	66	65	64	63	62	61	No	
M-158	9131 Rosedale Highway		62	64	66	Yes	64	64	63	63	62	62	No	
M-146	10021 Rosedale Highway		No Barrier	64	66	66	Yes	c	c	c	c	c	c	No
M-147	9701 Rosedale Highway		No Barrier	67	68	68	Yes	c	c	c	c	c	c	No
M-148	9711 Rosedale Highway	No Barrier	67	67	68	Yes	c	c	c	c	c	c	No	
M-176	7115 Rosedale Highway	No Barrier	69	70	72	Yes	c	c	c	c	c	c	No	
M-182	7115 Rosedale Highway	No Barrier	66	68	70	Yes	c	c	c	c	c	c	No	
M-184	Northeast of 2420 Wedding Lane	No Barrier	64	66	67	Yes	c	c	c	c	c	c	No	
M-185	Northeast of 2420 Wedding Lane	No Barrier	64	66	68	Yes	c	c	c	c	c	c	No	
M-188	12752 Rosedale Highway	No Barrier	59	60	60	No	--	--	--	--	--	--	N/A	
M-189	12746 Rosedale Highway	No Barrier	64	65	65	No	--	--	--	--	--	--	N/A	
M-103	12529 Rosedale Highway	No Barrier	63	64	64	No	--	--	--	--	--	--	N/A	
M-112	21087 Old Farm Road	No Barrier	63	64	65	No	--	--	--	--	--	--	N/A	

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Receptor Identification Number	Location	Barrier Identification Number	Existing Noise Level (dBA)	Predicted Noise Level without Project (dBA)	Predicted Noise Level with Project (dBA)	Noise Impact Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)						Reasonable and Feasible
							6-foot wall	8-foot wall	10-foot wall	12-foot wall	14-foot wall	16-foot wall	
M-114	12011 Whippoorwill Lane	No Barrier	62	63	64	No	--	--	--	--	--	--	N/A
M-115	11811 Whippoorwill Lane	No Barrier	63	63	64	No	--	--	--	--	--	--	N/A
ST-11	11828 Rosedale Highway	No Barrier	63	64	64	No	--	--	--	--	--	--	N/A
M-120	11217 Aimee Way	No Barrier	65	65	65	No	--	--	--	--	--	--	N/A
M-170	11209 Aimee Way	No Barrier	64	65	65	No	--	--	--	--	--	--	N/A
M-123	11108 Aimee Way	No Barrier	60	61	62	No	--	--	--	--	--	--	N/A
M-128	East of 11009 Aimee Way	No Barrier	62	63	64	No	--	--	--	--	--	--	N/A
M-129	10712 La Cresenta Drive	No Barrier	63	64	65	No	--	--	--	--	--	--	N/A
M-130	10704 La Cresenta Drive	No Barrier	60	61	61	No	--	--	--	--	--	--	N/A
M-131	2619 Karla Street	No Barrier	61	62	63	No	--	--	--	--	--	--	N/A
M-132	2706 Karla Street	No Barrier	61	61	61	No	--	--	--	--	--	--	N/A
M-133	2700 Karla Street	No Barrier	60	61	61	No	--	--	--	--	--	--	N/A
M-134	2618 Karla Street	No Barrier	58	59	60	No	--	--	--	--	--	--	N/A
M-135	2409 Verdugo Lane	No Barrier	59	60	60	No	--	--	--	--	--	--	N/A
M-136	2417 Verdugo Lane	No Barrier	59	60	60	No	--	--	--	--	--	--	N/A
M-140	10425 Rosedale Highway	No Barrier	60	60	60	No	--	--	--	--	--	--	N/A
M-141	10416 Rosedale Highway	No Barrier	63	63	64	No	--	--	--	--	--	--	N/A
M-142	2527 Dean Avenue	No Barrier	60	61	61	No	--	--	--	--	--	--	N/A
M-143	10200 Rosedale Highway	No Barrier	59	59	60	No	--	--	--	--	--	--	N/A
M-144	Northeast of 10200 Rosedale Highway	No Barrier	57	58	58	No	--	--	--	--	--	--	N/A
M-145	10024 Rosedale Highway	No Barrier	55	56	56	No	--	--	--	--	--	--	N/A
ST-13	9811 Rosedale Highway	No Barrier	56	57	57	No	--	--	--	--	--	--	N/A

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Receptor Identification Number	Location	Barrier Identification Number	Existing Noise Level (dBA)	Predicted Noise Level without Project (dBA)	Predicted Noise Level with Project (dBA)	Noise Impact Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)						Reasonable and Feasible
							6-foot wall	8-foot wall	10-foot wall	12-foot wall	14-foot wall	16-foot wall	
M-149	Northwest of 2507 Wheeler Street	No Barrier	63	64	64	No	--	--	--	--	--	--	N/A
M-150	2507 Wheeler Street	No Barrier	63	64	63	No	--	--	--	--	--	--	N/A
M-151	2530 Wheeler Street	No Barrier	57	58	59	No	--	--	--	--	--	--	N/A
M-152	2425 Hubert Street	No Barrier	59	60	61	No	--	--	--	--	--	--	N/A
M-153	9413 Rosedale Highway	No Barrier	57	58	59	No	--	--	--	--	--	--	N/A
M-154	9421 Max Drive	No Barrier	60	62	63	No	--	--	--	--	--	--	N/A
M-155	9413 Rosedale Highway	No Barrier	61	62	64	No	--	--	--	--	--	--	N/A
M-156	2530 Delbert Street	No Barrier	60	62	63	No	--	--	--	--	--	--	N/A
M-157	2424 Delbert Street	No Barrier	59	61	62	No	--	--	--	--	--	--	N/A
SCH-04 EXT	7115 Rosedale Highway	No Barrier	60	61	62	No	--	--	--	--	--	--	N/A
M-160	7115 Rosedale Highway	No Barrier	57	58	62	No	--	--	--	--	--	--	N/A
M-190	West of 4011 Rosedale Highway	No Barrier	61	62	64	No	--	--	--	--	--	--	N/A
M-191	4011 Rosedale Highway	No Barrier	59	61	63	No	--	--	--	--	--	--	N/A
<p>Notes:</p> <p>^a For Barrier 02, a 12-foot barrier is considered feasible for interior abatement of Receiver SCH-03.</p> <p>^b Abatement was not considered due to the location and number of driveway openings along SR 58.</p> <p>^c No feasible locations could be identified to place a noise barrier.</p> <p>dBA: A-weighted decibels; N/A = Not Applicable</p> <p>"Modeled Locations" are shown in Appendix J.</p> <p>Bold values are the noise levels with minimum wall heights that are reasonable and feasible.</p> <p>Source: <i>Noise Study Report</i> 2011.</p>													

**Table 2.20 Determination of Reasonableness of
Recommended Soundwalls**

Noise Barrier Identification Number	Location	Sensitive Receptors to be Protected	Acoustically Feasible	Recommended Wall Height (feet)	Approximate Cost of Recommended Soundwall	Reasonable Allowance per Noise Barrier	Recommended Soundwall is Reasonable (Yes or No)
1	Along the right-of-way on the northwest quadrant at the intersection of State Route 58 and Maher Way	3 Residences	No	Not applicable	Not applicable	Not applicable	No
2	Along the right-of-way on the northeast quadrant at the intersection of State Route 58 and Maher Way	4 Residences and the ABC Preschool Academy	Yes	12	\$178,945	\$188,000	Yes
3	Along the existing right-of-way on the south side of the intersection of State Route 58 and Lassen Drive	Rosedale Middle School	No	Not applicable	Not applicable	Not applicable	No
4	Along the existing right-of-way on the south side of the intersection of State Route 58 and Lassen Drive	Rosedale Middle School	No	Not applicable	Not applicable	Not applicable	No
5	Along the north side of right-of-way between Lassen Drive and Old Farm Road	4 Residences	No	Not applicable	Not applicable	Not applicable	No
6	Northeast corner of State Route 58 and Old Farm Road	1 Residence	Yes	12	\$67,692	\$45,000	No

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

Noise Barrier Identification Number	Location	Sensitive Receptors to be Protected	Acoustically Feasible	Recommended Wall Height (feet)	Approximate Cost of Recommended Soundwall	Reasonable Allowance per Noise Barrier	Recommended Soundwall is Reasonable (Yes or No)
7	North side of the State Route 58 between Lone Oak Drive and west of the BNSF Railway line	5 Residences	Yes	10	\$450,091	\$225,000	No
8	South side of the State Route 58 between Lone Oak Drive and Enger Street and west of the BNSF Railway line	Grace Baptist Church and 25 residences	Yes	14	\$1,195,705	\$1,125,000	No
9	South side of the State Route 58 between Enger Street and La Crescenta Drive west of the BNSF Railway line	3 Residences	Yes	14	\$389,757	\$129,000	No
10	Private property north side of the State Route 58 adjacent to Rosedale Service Road	2 Residences	Yes	10	\$232,190	\$70,000	No
11	South side of the State Route 58 adjacent to Verdugo Lane	2 Residences	Yes	8 10	\$71,081 \$80,387	\$86,000 \$90,000	Yes
12	Private property north of State Route 58 adjacent to Verdugo Lane	1 Residence	Yes	8	\$62,113	\$45,000	No

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

Noise Barrier Identification Number	Location	Sensitive Receptors to be Protected	Acoustically Feasible	Recommended Wall Height (feet)	Approximate Cost of Recommended Soundwall	Reasonable Allowance per Noise Barrier	Recommended Soundwall is Reasonable (Yes or No)
13 and 14	South side of State Route 58 across from the NW Promenade Mall, west of private driveways	8 Residences (mobile homes)	Yes	12	\$413,928	\$344,000	No
Graphics showing barrier locations are provided in Appendix J. Data taken from <i>the Noise Abatement Decision Report 2011</i> .							

Of the 14 noise barriers analyzed, 10 barriers were found to be feasible. Barriers 01, 03, 04, and 05 would not provide enough noise attenuation. Of those 10 feasible barriers, only two noise barriers (Barriers 02 and 11) can be built for less than the allowance and are considered reasonable. The remaining eight noise barriers would exceed the allowance and are therefore considered not reasonable. Based on this analysis, noise barriers 02 and 11 are feasible and reasonable and recommended for construction.

Future Interior Noise Impacts at School Classrooms

As noted earlier, three schools sit within the study limits. Section 216 of the California Streets and Highways Code relates to the noise effects of a proposed roadway project on public and private elementary and secondary schools. Under this code, a noise impact occurs if, as a result of a proposed roadway project, noise levels exceed 52 A-weighted decibels on the Sound Energy Equivalent Noise Level inside public or private elementary or secondary classrooms, libraries and multipurpose rooms.

If a project results in a noise impact under this code, noise abatement measures must be provided to reduce classroom noise to a level that is at or below 52 A-weighted decibels on the Sound Energy Equivalent Noise Level. If the noise levels exceed this level before construction of the proposed freeway project, then noise abatement must be provided to reduce the noise to the level that existed before the project was built.

Existing and future school classroom noise impacts were analyzed for each school, based on the distance between the project site and the ABC Preschool Academy with an outdoor play area, Rosedale Middle School, and Vista West Continuation School.

Rosedale Middle School

Under build conditions, the interior noise level at Rosedale Middle School would exceed 52 A-weighted decibels. Noise barriers were evaluated at this location to determine feasible barrier heights to reduce exterior noise levels. It was determined that Barriers 03 and 04 could not provide a 5-decibel reduction for the exterior noise level (Receiver M-106); they were not found to be reasonable in cost.

ABC Preschool Academy

Under future build conditions, the interior noise levels at ABC Preschool Academy exceed the interior standard of 52 A-weighted decibels. A barrier evaluation was done to determine whether a 5-decibel reduction could be achieved at the outdoor play area. It was determined that a noise barrier at a minimum height of 6 feet was able to achieve a 5-decibel reduction for the exterior noise level. However, a minimum noise

barrier height of 12 feet is recommended to reduce interior noise levels below 52 A-weighted decibels.

Vista West Continuation High School

Under existing and build conditions, interior noise levels at Vista West Continuation High School exceed 52 A-weighted decibels. There is no feasible location to place a noise barrier for evaluation due to the receivers being located in front of the driveway entrance of the school's parking lot.

No-Build Alternative

With the No-Build Alternative, no roadway improvements would be implemented. The projected noise levels indicate that the noise levels approach or exceed the noise abatement criteria in 14 locations without improvements to State Route 58. The two locations along the roadway where noise barriers have been identified as reasonable and feasible for the Build Alternative (Preferred Alternative) would not provide any noise attenuation with the No-Build Alternative.

Environmental Consequences under the California Environmental Quality Act

When determining whether a noise impact is significant under the California Environmental Quality Act, comparison is made between the baseline noise level and the build noise level. The California Environmental Quality Act noise analysis is completely independent of the National Environmental Policy Act analysis discussed above, which is centered largely on noise abatement criteria. Under the California Environmental Quality Act, the study looks at the setting of the noise impact and then how large or perceptible any noise increase would be in the given area. Key considerations include: the uniqueness of the setting, the sensitive nature of the noise receptors, the magnitude of the noise increase, the number of residences affected, and the absolute noise level.

Not all land uses would be considered noise sensitive under the California Environmental Quality Act. Noise-sensitive land uses are generally residences, schools, hotels, churches, and libraries. The study area is an urban environment with existing noise levels ranging from 55 A-weighted decibels to 74 A-weighted decibels.

The California Environmental Quality Act does not define a specific noise level increase for determining if an impact is significant. General considerations for community noise environments are that a change of over 5 A-weighted decibels is noticeable and changes of less than 3 A-weighted decibels are normally not noticeable.

The City of Bakersfield, as the lead agency under the California Environmental Quality Act for this project, determined a potential noise impact would occur if the project would cause noise levels over 5 A-weighted decibels (a level that is noticeable) and would exceed the noise abatement criteria shown in Table 2.17.

Remember that the analysis is comparing the 2035 traffic noise levels to existing noise levels. Part of the increased noise level is because the road would be closer to the existing uses, but a substantial amount of the increase is due to increased traffic levels in 2035, which would occur gradually over time. Based on this criterion, no locations in the study area would experience an increase of 5 A-weighted decibels in 2035 with the Build Alternative (Preferred Alternative) when compared to existing conditions. Therefore, there would be no project-related noise impacts under the California Environmental Quality Act.

Avoidance, Minimization, and/or Abatement Measures
Standard Condition

No noise impacts from construction would occur because construction would be done in accordance with Caltrans Standard Specifications and applicable local noise standards. Construction noise would be short term, intermittent, and overshadowed by local traffic noise. The following standard condition would be applicable:

SC-13 The control of noise from construction activities shall conform to the Caltrans Standard Specification Section 14-8.02 and Standard Special Provision S5-310, as follows:

- Construction noise shall not exceed 86 A-weighted decibels at 50 feet from the job site between the hours of 9:00 p.m. and 6:00 a.m.
- All internal combustion engines shall be equipped with sound control devices that are no less effective than those provided on the original equipment. No equipment will have an unmuffled exhaust.
- As directed by Caltrans in coordination with the City and Kern County, the contractor will implement appropriate additional noise mitigation measures, including changing the location of stationary construction equipment, turning off idling equipment, rescheduling construction activity, notifying adjacent residents in advance of construction work, and installing acoustic barriers around stationary construction noise sources.

- Noise monitoring shall be provided by the contractor during construction. The contractor shall provide training by a person trained in noise monitoring to one employee designated by the engineer and shall provide one Type 1 sound level meter and one acoustic calibrator to be used until contract acceptance. The sound level meter must be calibrated and certified by the manufacturer or other independent acoustical laboratory before delivery. The contractor shall provide annual recalibration by the manufacturer or other independent acoustical laboratory. The sound level meter must be capable of taking measurements using the A-weighting network and the slow response settings. The measurement microphone must be fitted with a windscreen.

Abatement Measures

As noted earlier, 14 locations were evaluated for feasibility based on achieving a minimum 5-decibel noise reduction.

Barrier location 01 is by three homes on Maher Way in the City of Bakersfield (Receiver locations M-100, M-101 and M-102). Measurements taken at these spots indicate that the existing noise level ranges from 64 A-weighted decibels to 70 A-weighted decibels. The future noise level at these receptors with the project is predicted to range from 65 A-weighted decibels to 70 A-weighted decibels. Without the project, the future noise level at these receptors is predicted to range from 64 A-weighted decibels to 70 A-weighted decibels. Because the predicted future noise level approaches or exceeds the noise abatement criteria for residential uses (67 A-weighted decibels), at Receivers M-100 and M-101, these homes would be adversely affected by noise. Barrier 01 was not found to be effective in achieving a 5-decibel reduction beyond the abated noise level provided by the existing 6-foot wall. Reasonable cost allowances were not calculated for Barrier 01 because it was not found to be acoustically feasible. (See Figure J2 in Appendix J for the barrier and receiver locations.)

Barrier location 02 is by three homes on Maher Way (Receiver locations M-161, M-104 and M-105) and the ABC Pre-School (Receiver location SCH-03 EXT), in the City of Bakersfield. Measurements taken at these spots indicate that the existing noise level ranges from 64 A-weighted decibels to 72 A-weighted decibels. The future noise level at these locations with the project is predicted to range from 65 A-weighted decibels to 73 A-weighted decibels. Because the predicted future noise level exceeds the noise abatement criteria for residential uses (67 dBA) and the 67 A-

weighted decibels exterior and 52 A-weighted decibels interior noise standards for the school, these receptors would be adversely affected by noise. Receiver M-104 is below the noise abatement criteria. To achieve a 5-decibel reduction at Receivers M-161, M-105, and SCH-03 EXT, a 12-foot wall would be needed. A 5-decibel reduction could not be achieved for M-104. If the total cost of the wall at this location is less than the total cost allowance, then the wall would likely be incorporated into the project. The total cost allowance, calculated in accordance with the Caltrans' Traffic Noise Analysis Protocol, is \$188,000. The current estimated cost of the wall is \$178,945. (See Figure J2 in Appendix J for the barrier and receiver locations.)

Barriers 03 and 04 were evaluated together because both barriers would be needed to provide noise attenuation to the Rosedale Middle School (Receiver locations M-106, SCH-02 EXT and M-107). Measurements taken at these receptors indicate that the existing noise level at these spots ranges from 69 A-weighted decibels to 70 A-weighted decibels. The future noise level at these receptors with the project is predicted to be 70 A-weighted decibels and would be 69 A-weighted decibels to 70 A-weighted decibels without the project. Because the predicted future noise level exceeds the 67 A-weighted decibels exterior and 52 A-weighted decibels interior noise abatement criteria for school uses, the school would be adversely affected by noise. Barriers 03 and 04 were not found to be effective in achieving a 5-decibel reduction because the barriers are located close to the driveway openings, which reduces the barriers' effectiveness at all evaluated barrier heights. Reasonable cost allowances were not calculated for Barriers 03 and 04 because that was not found to be acoustically feasible. (See Figures J2 and J3 in Appendix J for the barrier and receiver locations.)

Barrier location 05 is by four homes on Lassen Drive and Rosedale Highway in the City of Bakersfield (Receiver locations M-108 through M-111). Measurements taken at these spots indicate that the existing noise level ranges from 64 A-weighted decibels to 70 A-weighted decibels. The future noise level at these locations with the project is predicted to range from 65 A-weighted decibels to 70 A-weighted decibels. Without the project, the future noise level at these receptors would range from 64 A-weighted decibels to 70 A-weighted decibels. Because the predicted future noise level exceeds the noise abatement criteria for residential uses (67dBA) at Receiver locations M109 and M-110, the homes represented by these receptors would be adversely affected by noise. Barrier 05 was not found to be effective in achieving a 5 decibels reduction beyond the abated noise level provided by the existing 6-foot wall. Reasonable cost allowances were not calculated for Barrier 05 because it was not found to be

acoustically feasible. (See Figures J2 and J3 in Appendix J for the barrier and receiver locations.)

Barrier location 06 is located by one home on Rosedale Highway in the City of Bakersfield (Receiver location M-113). Measurements taken at this receptor indicate that the existing noise level at this location is 70 A-weighted decibels. The future noise level at this receptor with or without the project is predicted to be 72 A-weighted decibels. Because the predicted future noise level exceeds the noise abatement criteria for residential uses (67 A-weighted decibels), the home represented by this receptor would be adversely affected by noise. To achieve a 5-decibel reduction, a 12-foot wall would be needed. If the total cost of the wall at this location is less than the total cost allowance, then the wall would likely be incorporated into the project. The total cost allowance, calculated in accordance with the Caltrans' Traffic Noise Analysis Protocol, is \$45,000. The current estimated cost of the wall is \$67,692. (See Figure J3 in Appendix J for the barrier and receiver locations.)

Barrier location 07 is by seven homes on Lone Oak Drive and Mockingbird Court in the City of Bakersfield (receiver locations M-116, M-117, M-163 and M-177). Measurements taken at these receptors indicate that the existing noise level at these locations ranges from 60 A-weighted decibels to 65 A-weighted decibels. The future noise level at these locations with the project is predicted to range from 62 A-weighted decibels to 68 A-weighted decibels. Because the predicted future noise level approaches or exceeds the noise abatement criteria for residential uses (67 A-weighted decibels), five of the homes represented by these receptors would be adversely affected by noise (Receiver M-116 does not approach the noise abatement criteria). To achieve a 5-decibel reduction, a 10-foot wall would be needed. If the total cost of the wall at this location is less than the total cost allowance, then the wall would likely be incorporated into the project. The total cost allowance, calculated in accordance with the Caltrans' Traffic Noise Analysis Protocol, is \$225,000. The current estimated cost of the wall is \$450,091. (See Figure J4 in Appendix J for the barrier and receiver locations.)

Barrier location 08 is by 22 homes on Jewetta Avenue, Rosedale Highway, and Enger Street, as well as the Grace Baptist Church, all in the City of Bakersfield (Receiver locations CH-02, ST-15, M-118 through M-119, M-164 through M-170). Measurements taken at these receptors indicate that the existing noise level at these spots ranges from 59 A-weighted decibels to 66 A-weighted decibels. The future noise level at these spots with the project is predicted to range from 61 A-weighted decibels to 68 A-weighted

decibels. Because the predicted future noise level approaches or exceeds the noise abatement criteria for residential and church uses (67 A-weighted decibels) at most of these receptors, the church and 14 homes represented by these receptors would be adversely affected by noise (Receivers M-119, M-121, M-122, M-126, and M-127 do not approach the noise abatement criteria). To achieve a 5-decibel reduction, a 14-foot wall would be needed. A 14-foot sound barrier would benefit the equivalent of 25 homes (for the church, a “residential equivalence” is identified based on linear feet of roadway frontage). If the total cost of the wall at this location is less than the total cost allowance, then the wall would likely be incorporated into the project. The total cost allowance, calculated in accordance with the Caltrans’ Traffic Noise Analysis Protocol, is \$225,000. The current estimated cost of the wall is \$1,195,705. (See Figures J4 and J-5 in Appendix J for the barrier and receiver locations.)

Barrier location 09 is by five homes on Rosedale Highway in the City of Bakersfield (Receiver locations M-173, M-174 and M-179). Measurements taken at these spots indicate that the existing noise level ranges from 63 A-weighted decibels to 74 A-weighted decibels. The future noise level at these locations with the project is predicted to range from 65 A-weighted decibels to 66 A-weighted decibels. Because the predicted future noise level approaches the noise abatement criteria for residential uses (67 A-weighted decibels), these receptors would be adversely affected by noise. To achieve a 5-decibel reduction at Receivers M-173 and M-179, a 14-foot wall would be needed. A 5-decibel reduction could not be achieved for M-174. If the total cost of the wall at this spot is less than the total cost allowance, then the wall would likely be incorporated into the project. The total cost allowance, calculated in accordance with the Caltrans’ Traffic Noise Analysis Protocol, is \$129,000. The current estimated cost of the wall is \$389,757. (See Figure J5 in Appendix J for the barrier and receiver locations.)

Barrier location 10 is by six homes on Aimee Way in the City of Bakersfield (Receiver locations M-124, M-171 and M-172). Measurements taken at these spots indicate that the existing noise level ranges from 65 A-weighted decibels to 68 A-weighted decibels. The future noise level at these locations with the project is predicted to range from 66 A-weighted decibels to 69 A-weighted decibels. Because the predicted future noise level approaches or exceeds the noise abatement criteria for residential uses (67 A-weighted decibels) at these locations, these homes would be adversely affected by noise. A 5-decibel reduction could be achieved for M-172 with a 10-foot wall, providing noise abatement to 2 residences. Receivers M-124 and M-171 do not achieve a 5-decibel reduction with any evaluated barrier height. If the total cost of the wall at this location is less than the total cost allowance, then the wall would

likely be incorporated into the project. The total cost allowance, calculated in accordance with the Caltrans' Traffic Noise Analysis Protocol, is \$70,000. The current estimated cost of the wall is \$232,190. (See Figure J5 in Appendix J for the barrier and receiver locations.)

Barrier location 11 is by four homes on Verdugo Lane (Receiver locations M-137 and M-138) in the City of Bakersfield. Measurements taken at these spots indicate that the existing noise level ranges from 65 A-weighted decibels to 67 A-weighted decibels. The future noise level at these locations with the project is predicted to range from 66 A-weighted decibels to 68 A-weighted decibels. Because the predicted future noise level approaches or exceeds the noise abatement criteria for residential uses (67 A-weighted decibels), these receptors would be adversely affected by noise. To achieve a 5-decibel reduction at Receiver M-137, a minimum 8-foot-high wall would be needed. A 5-decibel reduction could not be achieved for Receiver M-138. As a result, Barrier 11 would provide abatement to 2 homes. If the total cost of the wall at this location is less than the total cost allowance, then the wall would likely be incorporated into the project. The total cost allowance, calculated in accordance with the Caltrans' Traffic Noise Analysis Protocol, is \$86,000 for an 8-foot-high wall and \$90,000 for a 10-foot wall. The current estimated cost is \$71,081 for an 8-foot-high wall and \$80,387 for a 10-foot wall. (See Figure J6 in Appendix J for the barrier and receiver locations.)

Barrier location 12 is by one home on Verdugo Lane in the City of Bakersfield (Receiver location M-139). Measurements taken at this receptor indicate that the existing noise level at this spot is 68 A-weighted decibels. The future noise level at this receptor with the project is predicted to be 69 A-weighted decibels. Because the predicted future noise level exceeds the noise abatement criteria for residential uses (67 A-weighted decibels), the home represented by this receptor would be adversely affected by noise. To achieve a 5-decibel reduction, an 8-foot wall would be needed. If the total cost of the wall at this location is less than the total cost allowance, then the wall would likely be incorporated into the project. The total cost allowance, calculated in accordance with the Caltrans' Traffic Noise Analysis Protocol, is \$45,000. The current estimated cost of the wall is \$62,113. (See Figure J6 in Appendix J for the barrier and receiver locations.)

Barriers 13 and 14 were evaluated together because both barriers would be needed to provide noise attenuation to the Greenacres Estates Mobile Home Park (Receiver locations ST-12, M-158, M-159, M-175, M-180, M-181, M-186 and M-187).

Measurements taken at these receptors indicate that the existing noise level at these spots ranges from 62 A-weighted decibels to 73 A-weighted decibels. The future noise level at these receptors with the project is predicted to be 66 A-weighted decibels to 77 A-weighted decibels. Because the predicted future noise level approaches or exceeds the 67 A-weighted decibels residential noise abatement criteria, these homes would be adversely affected by noise. Receivers ST-12, M-175, M-180 and M-186, which are next to State Route 58, received a 5-decibel reduction with a barrier height of 12 feet. Receivers M-158, M-159, M-181 and M-187 were found to receive some shielding from the noise barrier, but do not achieve a 5-decibel reduction. Barrier effectiveness for these receivers is reduced due to the location of the driveway openings. The total cost allowance, calculated in accordance with the Caltrans' Traffic Noise Analysis Protocol, is \$344,000. The current estimated cost of the wall is \$413,928. (See Figure J9 in Appendix J for the barrier and receiver locations.)

Based on the studies completed to date, Caltrans intends to build barriers to incorporate noise abatement at two locations:

- N-1 During final design, the feasibility of building the noise barriers as a “first order of work” will be evaluated, and will be incorporated into the construction plans if determined to be feasible. Based on the studies completed to date, Caltrans intends to incorporate noise abatement in the form of barriers at the following locations:
- Barrier 02 along the north side of the State Route 58 right-of-way east of Maher Drive and next to ABC Preschool Academy. Calculations based on preliminary design data indicate that the barrier would reduce noise levels by 5 A-weighted decibels at a height of 12 feet for four receptors at an estimated cost of \$178,945. This cost is considered reasonable since it is less than the reasonable allowance maximum of \$188,000.
 - Barrier 11 along the private property line near an adjacent parking lot south of State Route 58 and next to Verdugo Lane. Calculations based on preliminary design data indicate that 5 A-weighted decibels would be achieved for two receptors with either an 8-foot-high barrier with an estimated cost of \$71,081 or a 10-foot-high barrier with an estimated cost of \$80,387. The cost for the barrier of either height is considered reasonable since it is less than the reasonable maximum of \$86,000 or \$90,000, respectively, dependent on the barrier height.

2.3 Biological Environment

2.3.1 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 in Threatened and Endangered Species, Section 2.3.4. Wetlands and Other Waters are discussed in Section 2.3.2.

Affected Environment

Information in this section is summarized from the Natural Environment Study (March 2011).

The following areas occur in the biological study area: non-native grassland, ruderal/disturbed, open water/waterway, and developed/ornamental. Effects on these areas are discussed below. Figures 2-11a through 2-11c show the biological study area for this project. (Open water/waterway is the mapping unit to describe areas potentially within the jurisdiction of the U.S. Army Corps of Engineers, California Department of Fish and Game, and Regional Water Quality Control Board. It contains mainly the canals within the biological study area. These areas are vegetated with non-native grassland vegetation.)

The project lies within the Metropolitan Bakersfield Habitat Conservation Plan area. The purpose of the Metropolitan Bakersfield Habitat Conservation Plan is to provide long-term protection of natural vegetation communities and wildlife diversity while allowing compatible land uses and appropriate development and growth. The Metropolitan Bakersfield Habitat Conservation Plan addresses the effects of development on 11 plants and 7 wildlife species.

Environmental Consequences

Build Alternative (Preferred Alternative)

Most of the biological study area consists of developed areas with landscaping that provides low habitat value to wildlife. Undeveloped areas in the biological study area consist of non-native grassland, ruderal/disturbed, and open water/waterway. Non-native grassland is dominated by non-native annual grasses and both native and non-native herbs. Ruderal/disturbed areas consist of graded and regularly maintained areas such as dirt roads, active oil fields, and cleared roadsides with little to no vegetation. Open water and waterways are potentially under the jurisdiction of the U.S. Army Corps of Engineers, the California Department of Fish and Game, and the Regional Water Quality Control Board. The Friant-Kern Canal is a concrete-lined channel. The Calloway Canal and Emery Ditch are waterways that contain non-native grassland species.

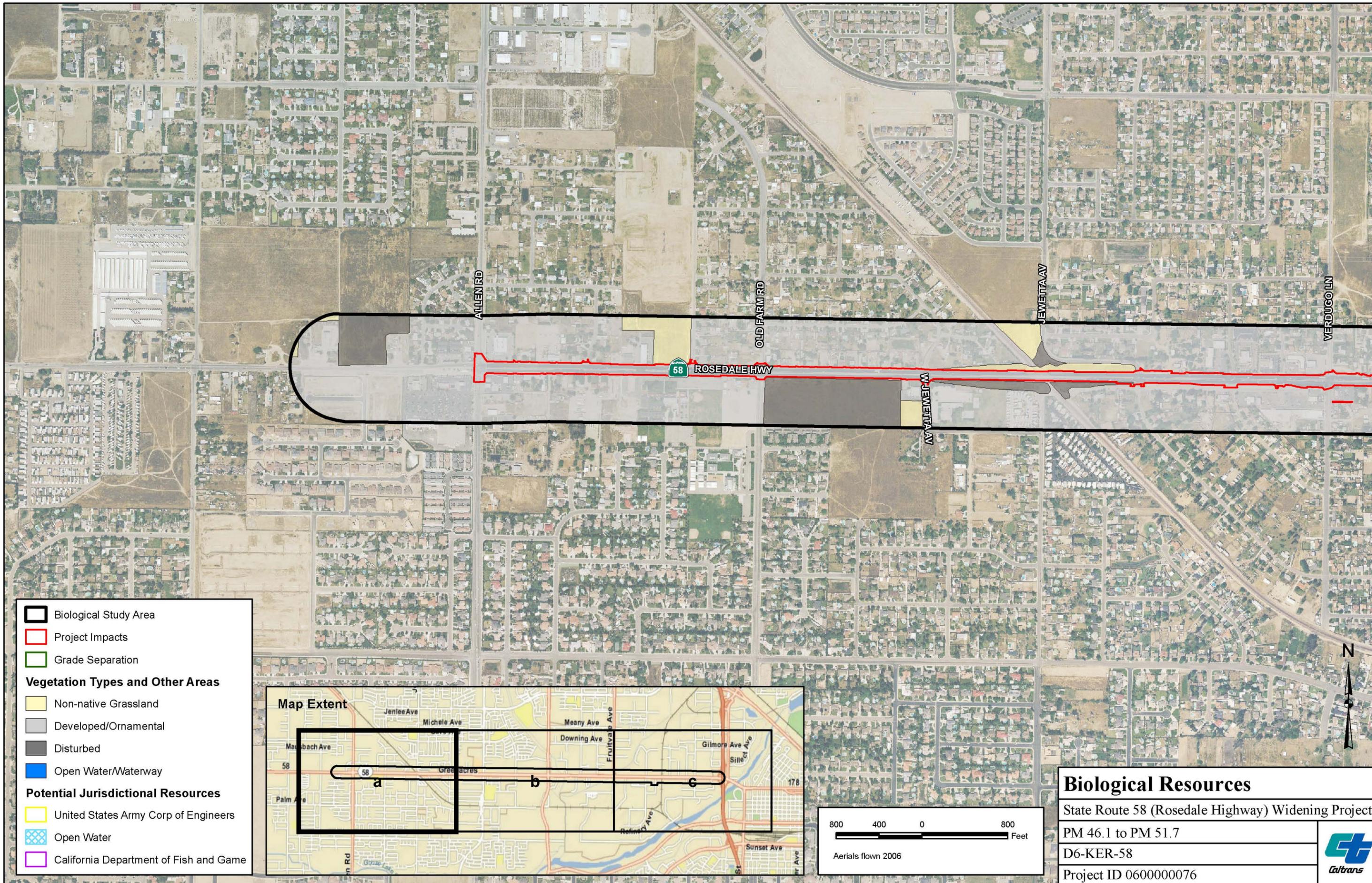


Figure 2-11a

The at-grade widening would permanently affect 0.16 acre of non-native grassland, 0.53 acre of ruderal/disturbed and 0.03 acre of open water/waterway, and would temporarily affect 3.17 acres of non-native grassland, 2.78 acres of ruderal/disturbed, and 0.06 acre of open water/waterway, totaling 6.73 acres of areas that provide habitat in the biological study area (see Figures 2-12a through 2-12c for project impacts on vegetation types). The grade separation at Landco Drive would permanently affect 0.02 acre of non-native grassland and 0.47 acre of ruderal/disturbed, and would temporarily affect 0.08 acre of non-native grassland and 0.52 acre of ruderal/disturbed, totaling 1.09 acres of areas that provide habitat in the biological study area (see Figures 2-12a through 2-12c for project impacts on vegetation types). The proposed project would result in some loss of habitat and a small increase in development along an existing road. The impact would be considered adverse, but less than substantial.

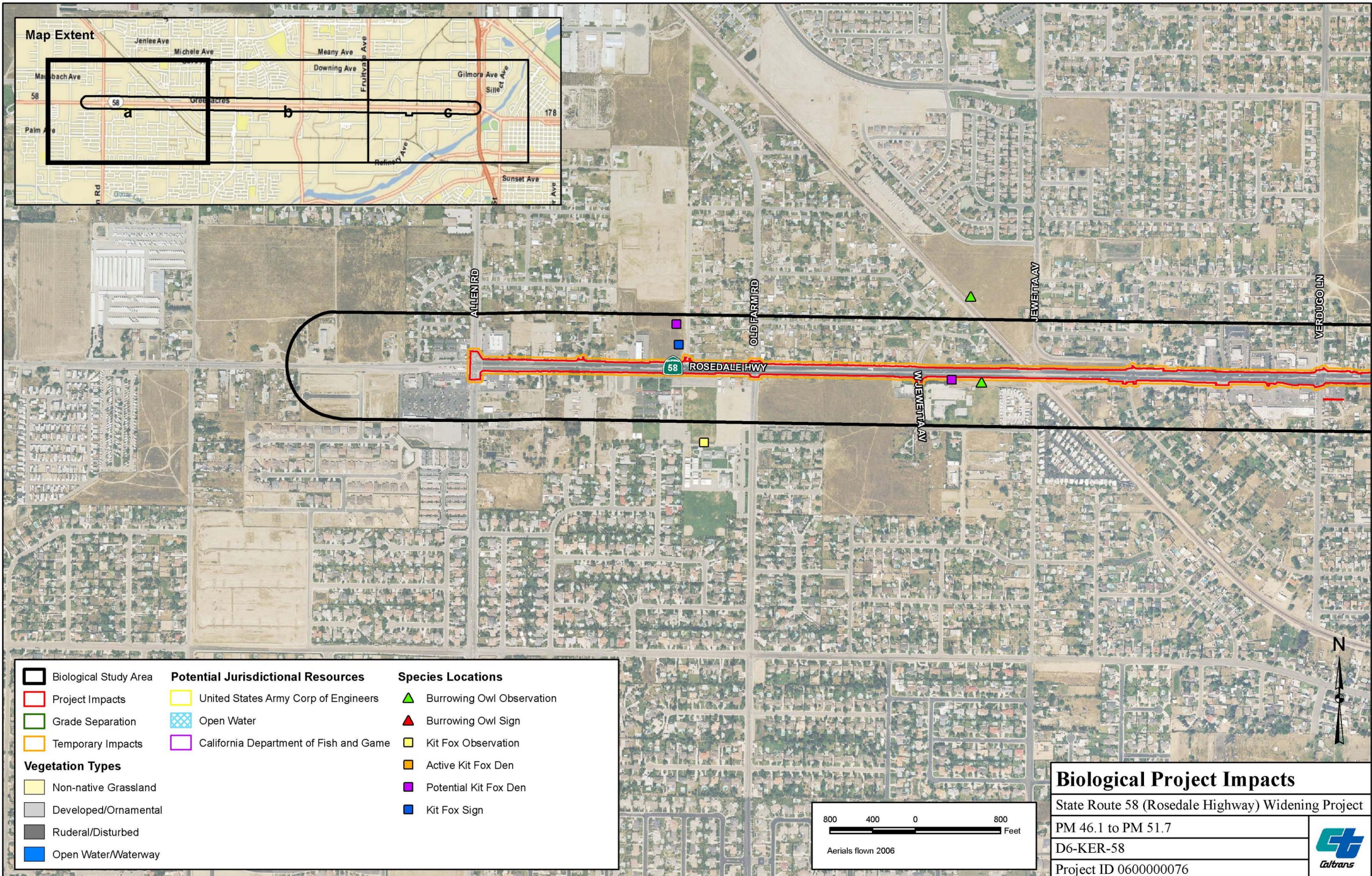
Though not expected to result in a major impact, the project could have small impacts related to (1) wildlife movement and habitat fragmentation and (2) dust and urban pollutants. Because most of the biological study area is developed, wildlife is expected to move mostly along the canals, railroad tracks, and along the road edges. The canals and railroad tracks would not be affected by the project. Runoff from construction or operation of the project could adversely affect water quality, which in turn could affect wildlife species that drink the water or plant species that occur in the immediate vicinity of the runoff.

No-Build Alternative

The No-Build Alternative would not result in any impacts because there would be no change from existing conditions.

Avoidance, Minimization, and/or Mitigation Measures

The Metropolitan Bakersfield Habitat Conservation Plan has developed a program that allows compatible projects to pay an in-lieu mitigation fee for each acre of vegetation that would be affected by the proposed project. The Habitat Conservation Trust Group approved City of Bakersfield's/Caltrans' participation in the Metropolitan Bakersfield Habitat Conservation Plan fee program for the projects in the Thomas Roads Improvement Program; this includes the State Route 58 Widening Project. The letter from the Habitat Conservation Trust Group is provided in Appendix L.

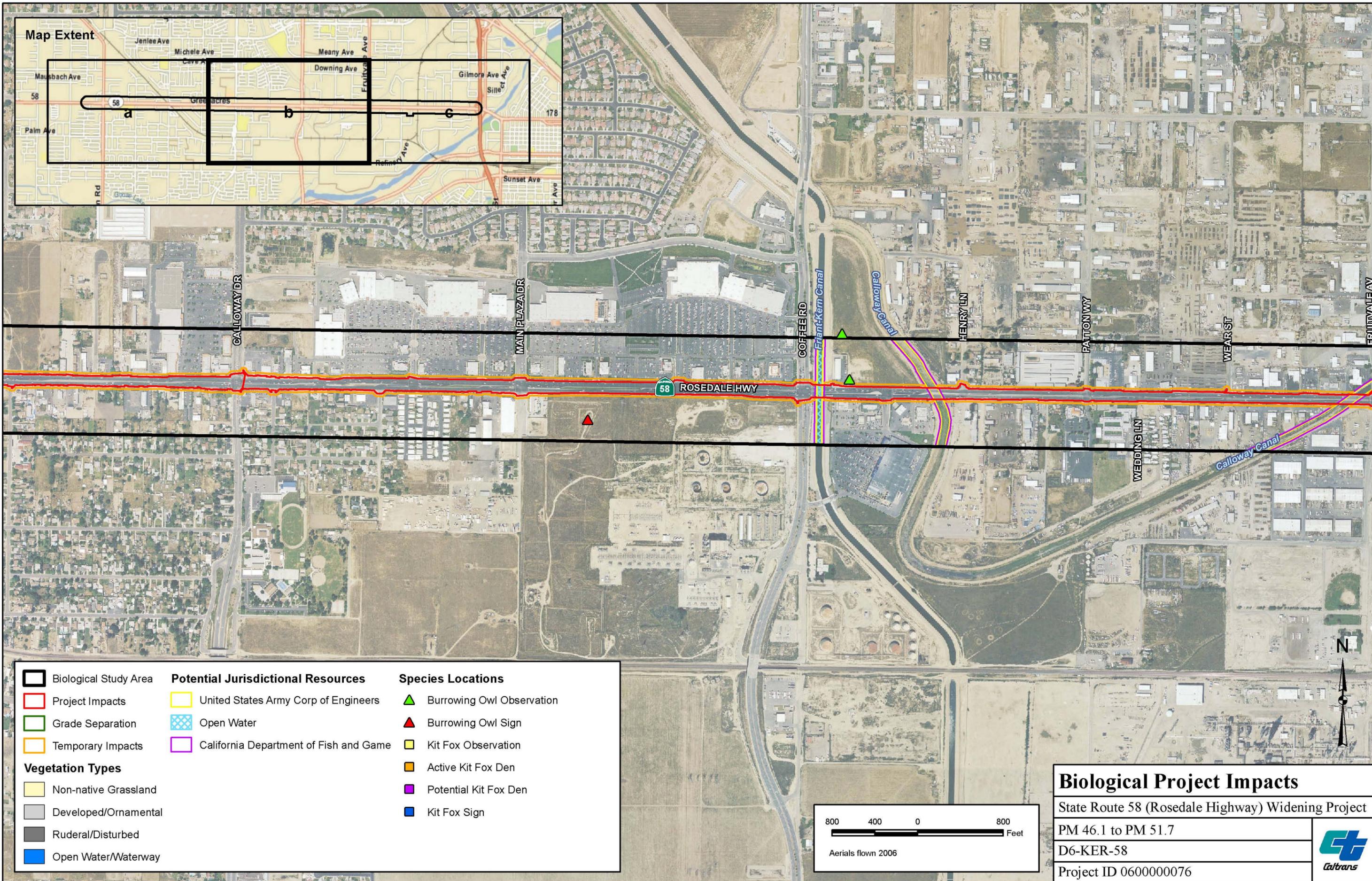


Biological Study Area	Potential Jurisdictional Resources	Species Locations
Project Impacts	United States Army Corp of Engineers	Burrowing Owl Observation
Grade Separation	Open Water	Burrowing Owl Sign
Temporary Impacts	California Department of Fish and Game	Kit Fox Observation
Vegetation Types		Active Kit Fox Den
Non-native Grassland		Potential Kit Fox Den
Developed/Ornamental		Kit Fox Sign
Ruderal/Disturbed		
Open Water/Waterway		

Biological Project Impacts
 State Route 58 (Rosedale Highway) Widening Project
 PM 46.1 to PM 51.7
 D6-KER-58
 Project ID 0600000076



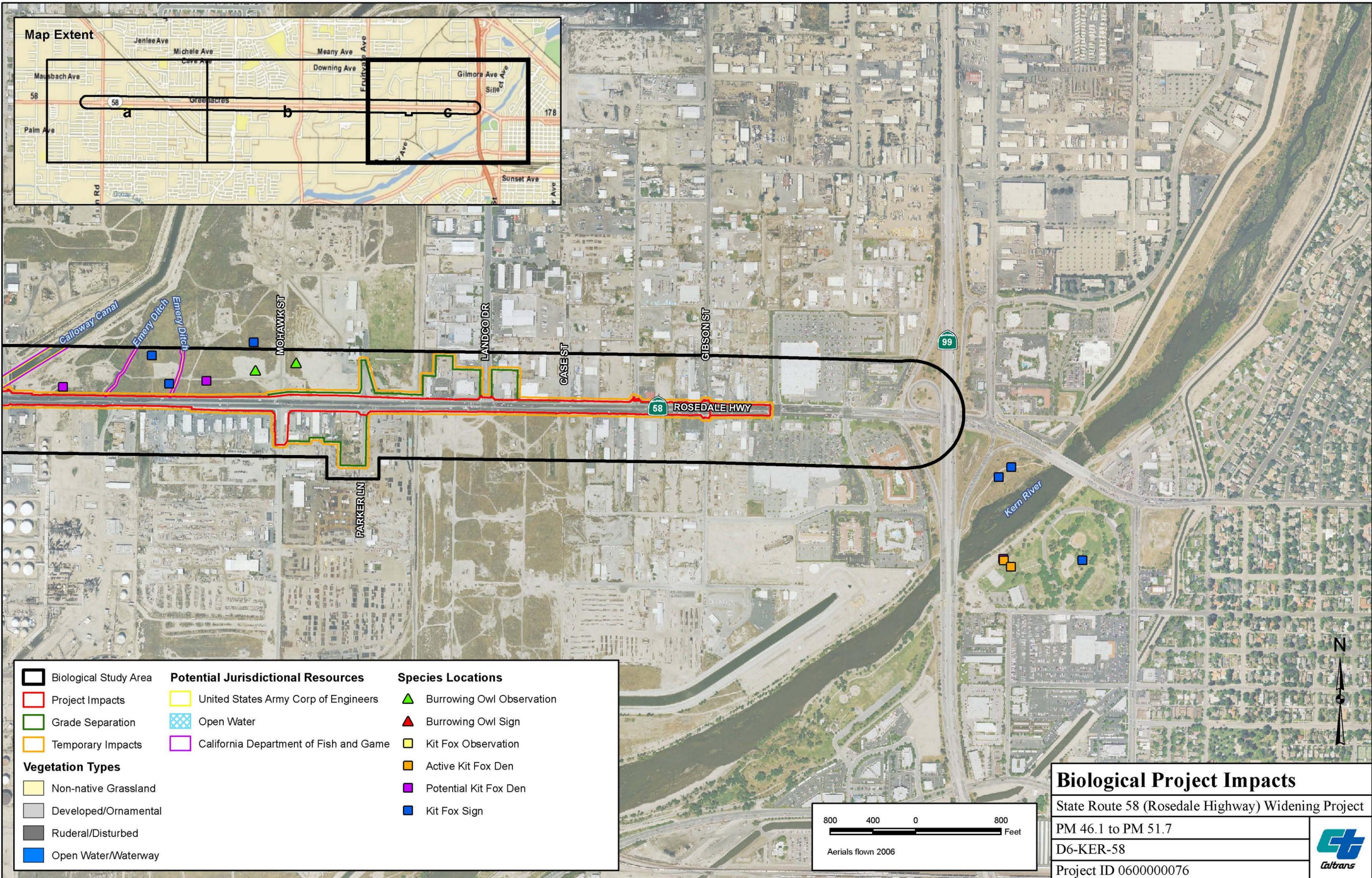
Figure 2-12a



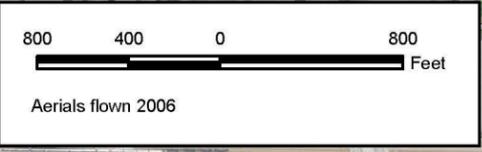
Biological Study Area	Potential Jurisdictional Resources	Species Locations
Project Impacts	United States Army Corp of Engineers	Burrowing Owl Observation
Grade Separation	Open Water	Burrowing Owl Sign
Temporary Impacts	California Department of Fish and Game	Kit Fox Observation
Vegetation Types		Active Kit Fox Den
Non-native Grassland		Potential Kit Fox Den
Developed/Ornamental		Kit Fox Sign
Ruderal/Disturbed		
Open Water/Waterway		

Biological Project Impacts	
State Route 58 (Rosedale Highway) Widening Project	
PM 46.1 to PM 51.7	
D6-KER-58	
Project ID 0600000076	

Figure 2-12b



Biological Study Area	Potential Jurisdictional Resources	Species Locations
Project Impacts	United States Army Corp of Engineers	Burrowing Owl Observation
Grade Separation	Open Water	Burrowing Owl Sign
Temporary Impacts	California Department of Fish and Game	Kit Fox Observation
Vegetation Types		Active Kit Fox Den
Non-native Grassland		Potential Kit Fox Den
Developed/Ornamental		Kit Fox Sign
Ruderal/Disturbed		
Open Water/Waterway		



Biological Project Impacts	
State Route 58 (Rosedale Highway) Widening Project	
PM 46.1 to PM 51.7	
D6-KER-58	
Project ID 0600000076	

Figure 2-12c

As a standard condition, the project would comply with the National Pollutant Discharge Elimination System Permit requirements. The permit would require measures to protect open space areas from urban runoff. In addition, all construction projects must comply with the San Joaquin Valley Pollution Control District's dust abatement requirements.

2.3.2 Wetlands and Other Waters

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 (33 U.S. Code 1344) is the main law regulating wetlands and surface waters. The Clean Water Act regulates the discharge of dredged or fill material into waters of the United States (U.S.), including wetlands. 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 Clean Water Act, 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 Clean Water Act.

Section 404 of the Clean Water Act 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 Corps of Engineers with oversight by the U.S. Environmental Protection Agency.

The U.S. Army Corps of Engineers issues two types of 404 permits: Standard and General permits. Nationwide permits, a type of General permit, are issued to authorize 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 U.S. Army Corps of Engineer's Standard permits. For Standard permits, the U.S. Army Corps of Engineers decision to approve is based on compliance with the U.S. Environmental Protection Agency's Section 404(b)(1) Guidelines (U.S. Environmental Protection Agency 40 Code of Federal Regulations Part 230), and whether permit approval is in the public interest.

The Section 404 (b)(1) Guidelines were developed by the U.S. Environmental Protection Agency in conjunction with U.S. Army Corps of Engineers 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 that would have less adverse effects. The guidelines state that the U.S. Army Corps of Engineers may not issue a permit if there is a least environmentally damaging practicable alternative 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 (Executive Order 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, this order states that a federal agency, such as the Federal Highway Administration and/or 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 mainly by the California Department of Fish and Game, the State Water Resources Control Board and the Regional Water Quality Control Boards. 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 will substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify the California Department of Fish and Game before beginning construction. If the California Department of Fish and Game determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement will be required.

The California Department of Fish and Game 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 U.S. Army Corps of Engineers may or may not be included in the area covered by a Streambed Alteration Agreement obtained from the California Department of Fish and Game.

The Regional Water Quality Control Boards were established under the Porter-Cologne Water Quality Control Act to oversee water quality. The Regional Water

Quality Control Board also issues water quality certifications for impacts to wetlands and waters in compliance with Section 401 of the Clean Water Act.

Affected Environment

Information in this section is summarized from the *Natural Environment Study* (March 2011).

No portion of the biological study area met all the U.S. Army Corps of Engineers’ requirements to be called a wetland. Therefore, no wetlands are present in the biological study area.

Drainages in the biological study area with an ordinary high water mark are considered jurisdictional waters of the U.S. and include the Friant-Kern Canal, Emery Ditch, and Calloway Canal. A total of 7.918 acres of non-wetland waters of the U.S., of which 0.987 acre is open water, occur in the biological study area. The location of these resources is shown in Figures 2-11a through 2-11c. Table 2.21 provides a breakdown of the numbers by drainage.

Table 2.21 Build Alternative (Preferred Alternative) Impacts on Waters Under the Jurisdiction of the U.S. Army Corps of Engineers

WOUS	Existing (Acres)	At-grade Widening ^a			Grade-Separation at Landco Drive ^a		
		Permanent Impact (Acres)	Temporary Impact (Acres)	Total Impact (Acres)	Permanent Impact (Acres)	Temporary Impact (Acres)	Total Impact (Acres)
Calloway Canal							
Wetlands	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Open Water	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Other Non-wetland Waters	5.414	0.001	0.055	0.056	0.000	0.000	0.000
Friant-Kern Canal							
Wetlands	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Open Water	0.987	0.000	0.000	0.000	0.000	0.000	0.000
Other Non-wetland Waters	1.148	0.000	0.000	0.000	0.000	0.000	0.000
Emery Ditch							
Wetlands	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Open Water	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Other Non-wetland Waters	0.369	0.001	0.000	0.001	0.000	0.000	0.000
Total	7.918	0.002	0.055	0.057	0.000	0.000	0.000

^a Source: *Natural Environment Study* 2011

The California Department of Fish and Game’s jurisdictional limits are defined by the top of the bank in the absence of riparian vegetation. A total of 9.319 acres of

California Department of Fish and Game jurisdiction occurs in the biological study area. Table 2.22 provides a breakdown of the numbers by drainage.

Table 2.22 Build Alternative (Preferred Alternative) Impacts on Waters Under the Jurisdiction of the California Department of Fish and Game

CDFG Jurisdiction	Existing (Acres)	At-grade Widening ^a				Grade-Separation at Landco Drive ^a			
		Permanent Impact Structural (Acres) ^b	Permanent Impact Shade ^c (Acres)	Temporary Impact (Acres)	Total Impact (Acres)	Permanent Impact Structural (Acres) ^b	Permanent Impact Shade ^c (Acres)	Temporary Impact (Acres)	Total Impact (Acres)
Calloway Canal	6.768	0.001	0.029	0.026 ^d	0.056	0.000	0.000	0.000	0.000
Friant-Kern Canal	1.974	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Emery Ditch	0.577	0.002	0.000	0.000	0.002	0.000	0.000	0.000	0.000
Total	9.319	0.003	0.029	0.026	0.058	0.000	0.000	0.000	0.000

^a Source: *Natural Environment Study 2011*

^b Structural impact relates specifically to any structure such as a roadway, bridge abutment, or bridge column that is located within jurisdictional area that will permanently displace the jurisdictional area with the structure(s).

^c Shade impacts specifically relate to structures placed over a jurisdictional area that produce shade in areas that were not previously shaded. Shade reduces access to direct sunlight that, in turn, affects the growth of plant species that could occur within these jurisdictional areas; therefore, these areas should be considered a biological resource impact.

^d The temporary impact does not include the footprint of the bridge expansion.

Environmental Consequences

Build Alternative (Preferred Alternative)

The roadway widening would result in 0.002 acre of permanent impacts on waters under the jurisdiction of the U.S. Army Corps of Engineers and 0.003 acre of permanent impacts on waters under the jurisdiction of the California Department of Fish and Game from structural components of the project. Permanent shade impacts would result from the shadow that the widened bridges over Calloway Canal and Emery Ditch would cast. Temporary impacts are those that affect the area needed to build the bridge, which includes access for and storage of construction equipment and area for moving around.

The project requires the following permits:

- U.S. Army Corps of Engineers Section 404 Permit (Nationwide Permit No. 14 [Linear Transportation Projects])
- Regional Water Quality Control Board Section 401 Water Quality Certification
- California Department of Fish and Game Section 1602 Streambed Alteration Agreement

A detailed summary of the regulatory approval process is provided in Section 5.0 of the *Jurisdictional Delineation Report*. In addition, a summary of regulatory requirements is provided in Section 2.1 of the *Natural Environment Study*.

The roadway widening would affect 0.057 acre (0.002 acre permanent and 0.055 acre temporary) of non-wetland waters of the U.S. (see Table 2.21). There would be no direct impact on the Friant-Kern Canal.

The project would affect about 0.058 acre (0.003 acre permanent structural, 0.029 acre permanent shade, 0.026 acre temporary) of areas under the jurisdiction of the California Department of Fish and Game (see Table 2.22). (The shade impacts overlap the temporary impacts; together they add to 0.055 acre.) There would be no direct impact on the Friant-Kern Canal.

No-Build Alternative

There would be no change from existing conditions with the No-Build Alternative, so there would be no impact to wetlands and other waters from this alternative.

Least Environmentally Damaging Practicable Alternative

Because it is the only alternative that satisfied the project purpose, the Build Alternative (Preferred Alternative) is the least environmentally damaging practicable alternative. Additionally, because a minimal amount of acreage would be affected and specified mitigation would reduce potential effects, the Build Alternative would not have substantial adverse effects on waters of the U.S.

No portion of the biological study area met all the U.S. Army Corps of Engineers' requirements to be called a wetland. Project design minimizes the potential impacts by widening existing bridge structures. The project would affect 0.057 acre (0.002 acre permanent and 0.055 acre temporary) of non-wetland "waters of the U.S." The impacts are associated with the columns necessary to support the widened bridge and not as a result of filling the canals. As discussed above, 0.001 acre of impact would occur at both Calloway Canal and Emery Ditch. Because the roadway runs east to west and the canals generally flow north to south, resource avoidance is not possible. Given the minimal amount of impact, the design measures used to minimize impacts, and Minimization Measure B-1, it is determined there is no practicable alternative to the proposed construction in waters of the U.S. The proposed action includes all practicable measures to minimize harm to waters of the U.S.

Avoidance, Minimization, and/or Mitigation Measures

Due to the small effect of the Build Alternative (Preferred Alternative) on areas under the jurisdiction of the U.S. Army Corps of Engineers, Regional Water Quality Control Board, and the California Department of Fish and Game, replacement habitat to compensate for the loss of habitat for the Build Alternative (Preferred Alternative) would be incorporated into the Jurisdictional Habitat Replacement Plan developed for the Westside Parkway project (currently under development) or there would be a payment of an in-lieu fee. This would provide more beneficial effects for the project region.

Minimization Measure

B-1 Prior to the initiation of any grading and/or construction-related activity within 50 feet of areas under the jurisdiction of the U.S. Army Corps of Engineers, Regional Water Quality Control Board, and the California Department of Fish and Game, the contractor shall install fencing, flagging, lath and rope, or another device to delineate the jurisdictional areas that would not be affected by the project. The purpose of the fencing is to protect the jurisdictional areas from inadvertent disturbance. Placement of the fencing shall be done under the supervision of a qualified Biological Monitor.

2.3.3 Animal Species

Regulatory Setting

Many state and federal laws regulate impacts to wildlife. The U.S. Fish and Wildlife Service, the National Oceanic and Atmospheric Administration's National Marine Fisheries Service and the California Department of Fish and Game 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. Species listed or proposed for listing as threatened or endangered are discussed in Section 2.3.4. All other special-status animal species are discussed here, including California Department of Fish and Game fully protected species and species of special concern, and U.S. Fish and Wildlife Service or National Oceanic and Atmospheric Administration National Marine 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
- Sections 4150 and 4152 of the Fish and Game Code

Affected Environment

Information in this section is summarized from the *Natural Environment Study* (March 2011).

Special-status species include California Department of Fish and Game fully protected species and species of special concern, in addition to those that are formally listed as threatened or endangered. Thirty-eight special-status wildlife species (including 17 threatened or endangered species) are known to occur in the project region and were evaluated in the *Natural Environment Study*. Most of these special-status animal species are associated with particular habitat types that are absent from the biological study area. Four non-listed special-status wildlife species or their habitats could occur in the biological study area: southwestern pond turtle (*Actinemys [Clemmys] marmorata pallida*), white-tailed kite (*Elanus leucurus*), burrowing owl (*Athene cunicularia*), and loggerhead shrike (*Lanius ludovicianus*).

The southwestern pond turtle is a California species of special concern. No southwestern pond turtles were found during surveys; however, suitable habitat for this species is present along the Calloway Canal and Emery Ditch within the biological study area. Therefore, the southwestern pond turtle has limited potential to occur in the biological study area.

The white-tailed kite is a California fully protected species. No white-tailed kites were found during surveys. No suitable nesting habitat is present for this species in the biological study area. Limited suitable foraging habitat is present in the biological study area. Therefore, this species has a limited potential to occur in the biological study area for foraging, but it is not expected to occur for nesting.

The burrowing owl is a California species of special concern. Suitable foraging and nesting habitat for this species is present in the biological study area. This species was found in the biological study area during 2008 focused surveys. A total of seven

burrowing owls were seen at six locations in the biological study area (Figures 2-13a through 2-13c).

The loggerhead shrike is a California species of special concern. Limited suitable foraging and nesting habitat for this species is located in the biological study area. This species was found within the biological study area north of Rosedale Highway near Mohawk Street and also south of the biological study area in the same general area south of the refinery near the Kern River. The individuals were seen foraging and perched; their nesting status was not determined during 2008 surveys.

The remaining non-listed special-status species are not expected to occur in the biological study area due to lack of suitable habitat because they were not seen during surveys or because they are not known to occur in the immediate project vicinity.

Environmental Consequences

Build Alternative (Preferred Alternative)

The loss of nesting and/or foraging habitat for the four non-listed special-status wildlife species in the biological study area would be small since it would occur along the edge of an existing road. The project would have the following impacts on the four species:

Southwestern Pond Turtle: The project would permanently affect 0.03 acre and temporarily affect 0.06 acre along the waterways. Implementation of avoidance and minimization measures, along with implementation of best management practices while working in and around waterways, would ensure that the proposed project would not directly injure or kill any southwestern pond turtles or affect their habitat.

White-tailed Kite: The project would permanently affect 1.21 acres (0.18 acre of non-native grassland, 1.00 acre of ruderal/disturbed area, and 0.03 acre of open water/waterway) of foraging habitat for this species. It would temporarily affect 6.61 acres (3.25 acres of non-native grassland, 3.30 acres of ruderal/disturbed area, and 0.06 acre of open water/waterways) of foraging habitat for this species.

The biological study area does not support any potential nest trees; therefore, there would be no impact on nesting habitat.

Burrowing Owl: The Build Alternative (Preferred Alternative) would permanently affect 1.21 acres (0.18 acre of non-native grassland, 1.00 acre of ruderal/disturbed areas, and 0.03 acre of open water/waterway) of foraging and nesting habitat for this

species. It would temporarily affect 6.61 acres (3.25 acres of non-native grassland, 3.30 acres of ruderal/disturbed area, and 0.06 acre of open water/waterways) of foraging and nesting habitat for this species. Construction activities that crush a burrowing owl burrow or disturb burrowing owl nesting activities (such as keeping adult or young owls from normal foraging activities due to nearby noise and disturbance) could adversely affect the owls.

Loggerhead Shrike: The Build Alternative (Preferred Alternative) would permanently affect 1.21 acres (0.18 acre of non-native grassland, 1.00 acre of ruderal/disturbed area, and 0.03 acre of open water/waterway) of foraging habitat for this species. It would temporarily affect 6.61 acres (3.25 acres of non-native grassland, 3.30 acres of ruderal/disturbed area, and 0.06 acre of open water/waterways) of foraging habitat for this species. The loss of habitat for this species would be limited relative to the availability of similar habitat in the region. Loggerhead shrike could nest in trees and shrubs within the biological study area, and vegetation removal and/or nearby construction could adversely affect nesting efforts for this species. Construction during the nesting season could disturb nesting activities, possibly resulting in nest abandonment, loss of young and reduced health and vigor of eggs and/or nestlings.

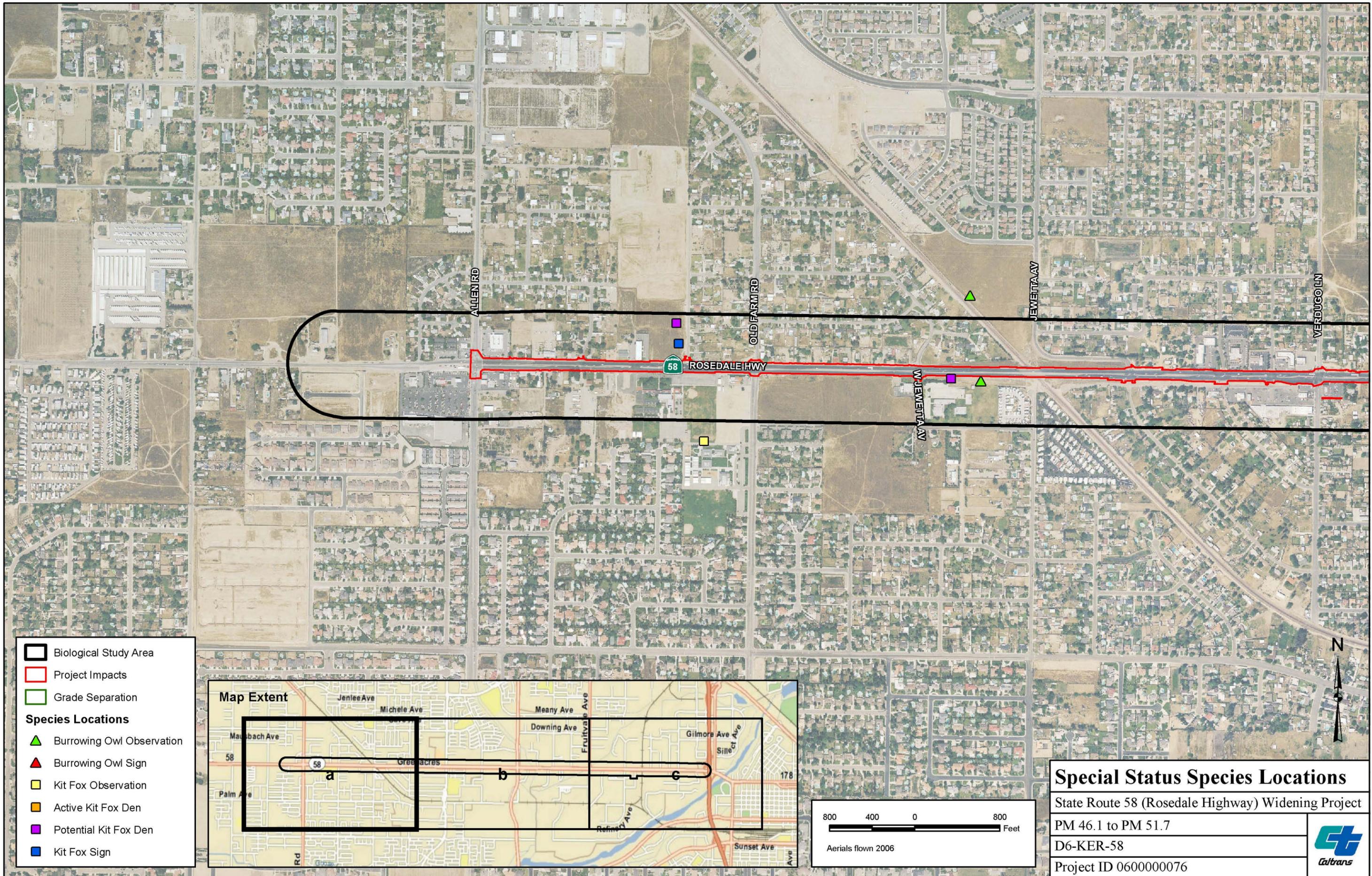
No-Build Alternative

There would be no change from existing conditions with the No-Build Alternative.

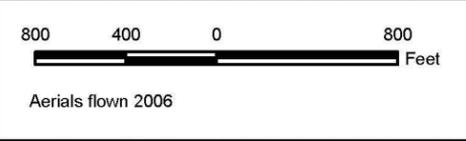
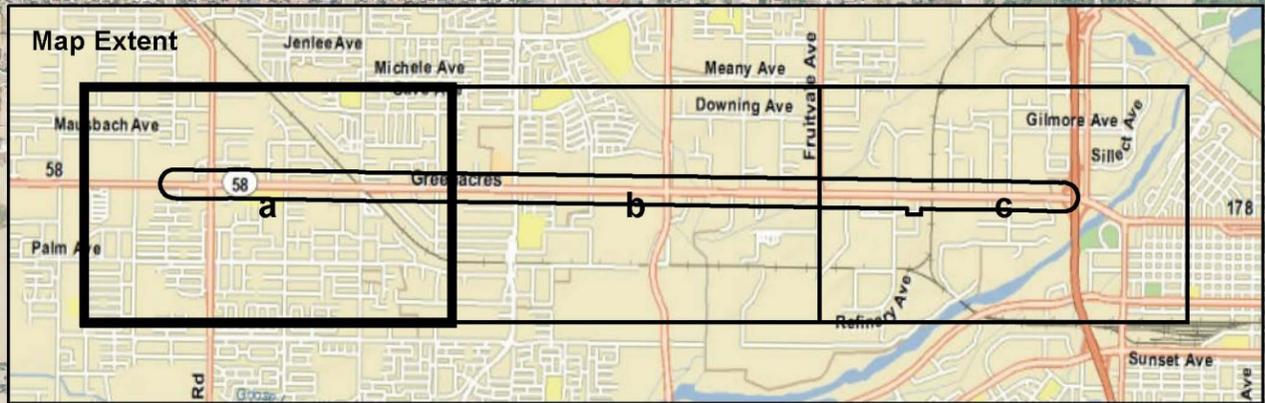
Avoidance, Minimization, and/or Mitigation Measures

Avoidance and Minimization Measures

B-2 **Southwestern Pond Turtle:** Prior to construction along Calloway Canal and Emery Ditch, a focused survey for the southwestern pond turtle shall be conducted by a qualified biologist (i.e., one holding a California Department of Fish and Game Memorandum of Understanding for this species) no more than 24 hours prior to the onset of construction. If no southwestern pond turtles are observed, no measures would be necessary. If this species is observed on or adjacent to the project site, a qualified biologist, in coordination with the California Department of Fish and Game, will capture and relocate the turtle(s) to appropriate habitat at a safe distance from the construction site.



- Biological Study Area
- Project Impacts
- Grade Separation
- Species Locations**
- ▲ Burrowing Owl Observation
- ▲ Burrowing Owl Sign
- Kit Fox Observation
- Active Kit Fox Den
- Potential Kit Fox Den
- Kit Fox Sign



Special Status Species Locations
 State Route 58 (Rosedale Highway) Widening Project
 PM 46.1 to PM 51.7
 D6-KER-58
 Project ID 0600000076

Figure 2-13a

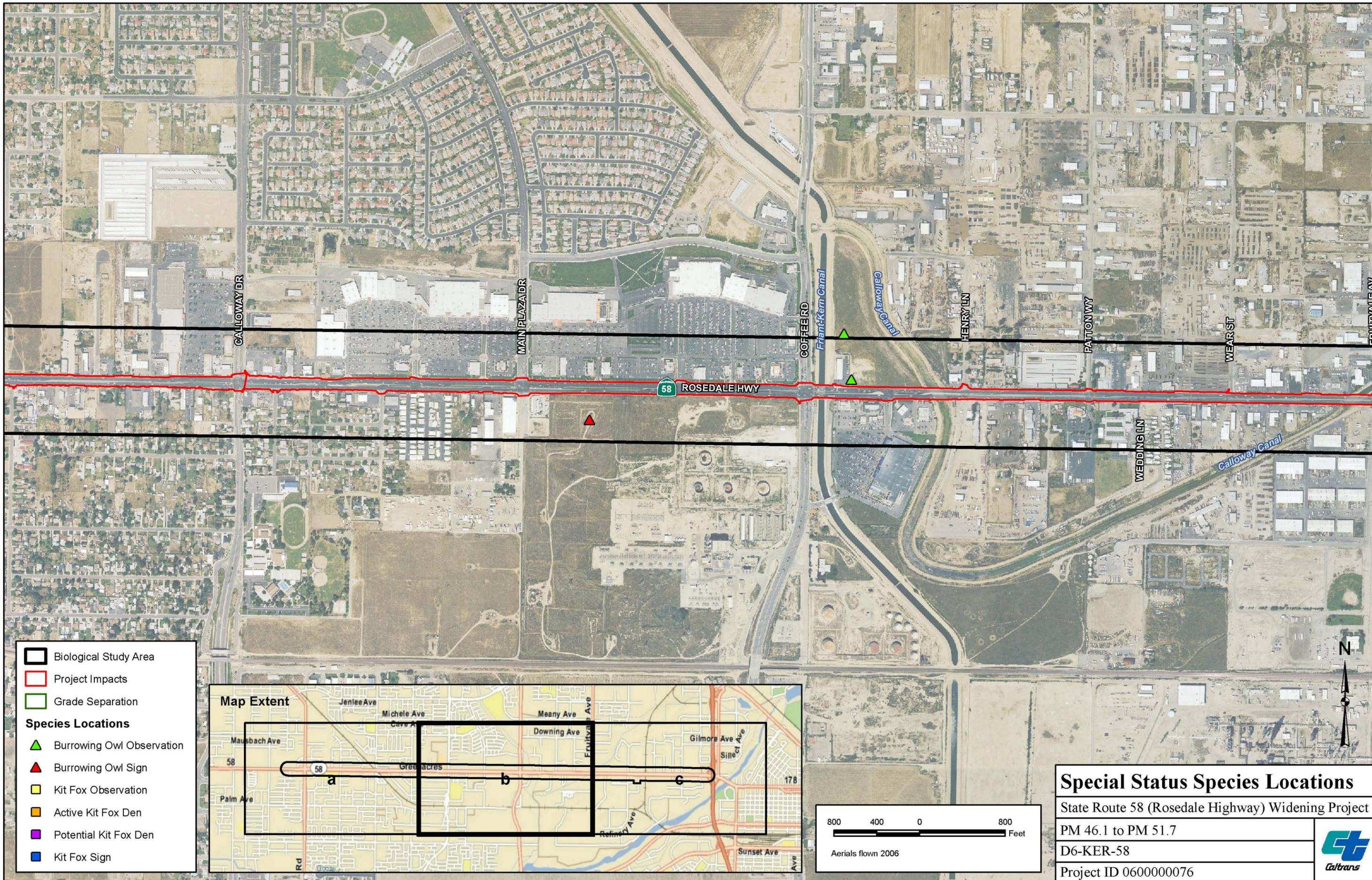
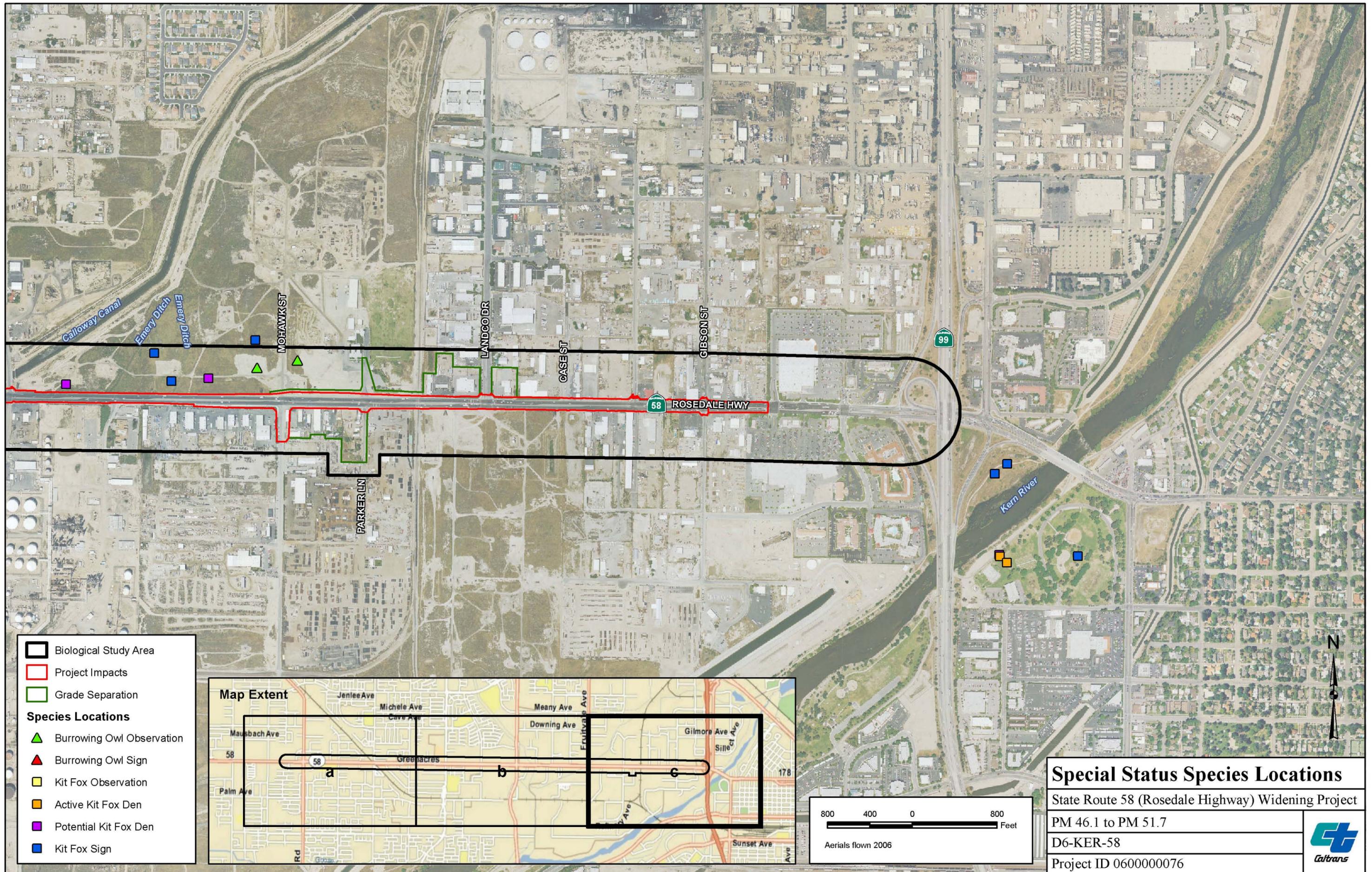
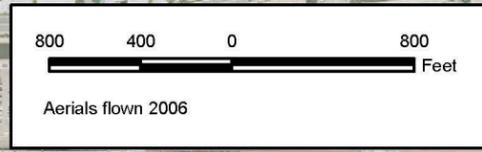
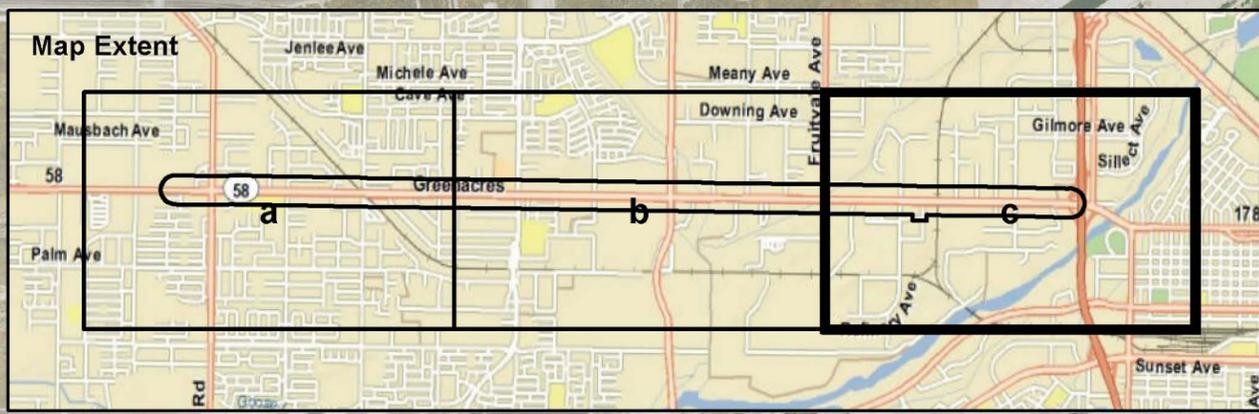


Figure 2-13b



- Biological Study Area
- Project Impacts
- Grade Separation
- Species Locations**
- ▲ Burrowing Owl Observation
- ▲ Burrowing Owl Sign
- Kit Fox Observation
- Active Kit Fox Den
- Potential Kit Fox Den
- Kit Fox Sign



Special Status Species Locations
 State Route 58 (Rosedale Highway) Widening Project
 PM 46.1 to PM 51.7
 D6-KER-58
 Project ID 0600000076

Figure 2-13c

B-3 **Burrowing Owl:** The following avoidance and minimization measures are adapted from recommendations in the California Burrowing Owl Consortium (1993).

- A pre-construction survey of the biological study area shall be conducted by a qualified biologist no more than 30 days prior to initial ground-disturbing activities. Any active burrow found during pre-construction survey efforts shall be mapped on the construction plans. If no active burrows are found, no further measures shall be required. Results of the pre-construction surveys shall be provided to the California Department of Fish and Game. If burrowing owls are observed within or adjacent to (within 250 feet) the impact area (area disturbed by construction activities), a Burrowing Owl Mitigation Plan shall be developed by the City of Bakersfield, in cooperation with Caltrans, in consultation with the California Department of Fish and Game. The Mitigation Plan will likely require the following items:
- No disturbance will occur within 60 feet of occupied burrows during the non-breeding season (September 1 through January 31) or within 250 feet during the breeding season (February 1 through August 31).
- If owls must be moved away from the disturbance area, passive eviction and relocation (by owls themselves) is preferable to trapping. Relocation shall only be implemented during the non-breeding season by a qualified biologist and shall occur in cooperation with the California Department of Fish and Game. Owls shall be excluded from burrows in the immediate impact zone by installing one-way doors in burrow entrances. One-way doors shall be left in place 48 hours prior to construction to ensure owls have left the burrow before excavation.
- An effort will be made to preserve foraging habitat contiguous with occupied burrow sites for each pair of breeding burrowing owls or single unpaired resident bird.

B-4 **Loggerhead Shrike:** Per the Biological Opinion for the project, trees, shrubs, and other vegetation will be removed prior to the nesting season of migratory birds (U.S. Fish and Wildlife Service 2012).

- B-5 **Raptor Nesting:** If construction is to start during the nesting season (February 1 to August 31), pre-construction surveys shall be conducted by a qualified biologist for active raptor nests within seven days prior to the onset of construction activities. Any active raptor nest/burrow found during survey efforts shall be mapped on the construction plans and protected in coordination with the California Department of Fish and Game until nesting activity has ended to ensure compliance with Section 3503.5 of the California Fish and Game Code. To protect any nest/burrow site, the following restrictions on construction may be required between February 1 and August 15 (or until nests/burrows are no longer active as determined by a qualified biologist): (1) clearing limits may be established a minimum of 250 feet in any direction from any occupied nest/burrow and (2) access and surveying may be restricted within 250 feet or more of any occupied raptor nest/burrow. Any encroachment into the buffer area around the known nest shall only be allowed if a qualified biologist determines, in consultation with California Department of Fish and Game, that the proposed activity will not disturb the raptor nest/burrow occupants. If no raptor nests/burrows are found during pre-construction surveys, no further requirements apply.
- B-6 **Burrowing Owl:** Compensatory mitigation for the San Joaquin kit fox shall also mitigate for the permanent loss of 1.21 acres of burrowing owl habitat. Additional compensatory mitigation for burrowing owls shall only be required if burrowing owls found within 250 feet of construction activities during pre-construction surveys cannot be avoided during construction. In this event, potential compensatory mitigation may include purchase of suitable habitat through the payment of fees to the Metropolitan Bakersfield Habitat Conservation Plan Trust Group for this species or construction of artificial burrows in City sumps similar to the Kit Fox Habitat Program.

2.3.4 Threatened and Endangered Species

Regulatory Setting

The main federal law protecting threatened and endangered species is the Federal Endangered Species Act: 16 U.S. Code Section 1531, et seq. See also 50 Code of Federal Regulations 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, are required to consult with the U.S. Fish and Wildlife

Service and the National Oceanic and Atmospheric Administration’s National Marine 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 change 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 the Federal Endangered Species Act 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, California Fish and Game Code, Section 2050, et seq. The California Endangered Species Act 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 Game is the agency responsible for implementing the California Endangered Species Act.

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.” The California Endangered Species Act allows for take incidental to otherwise lawful development projects; for these actions, an incidental take permit is issued by the California Department of Fish and Game. For species listed under both the Federal Endangered Species Act and California Endangered Species Act requiring a Biological Opinion under Section 7 of the Federal Endangered Species Act, the California Department of Fish and Game may also authorize impacts to California Endangered Species Act 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 (A) 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 (B) exclusive fishery management authority beyond the exclusive economic zone over

such anadromous species, Continental Shelf fishery resources, and fishery resources in special areas.

Affected Environment

Information contained in this section is summarized from the *Natural Environment Study* (March 2011) and *Biological Assessment* (September 2011).

Twenty-four threatened or endangered plant and wildlife species are known to occur in the project region and were evaluated in the *Natural Environment Study*. Appendix M provides a listing of the special-status species that are known to occur in the area. One threatened or endangered wildlife species—the San Joaquin kit fox (*Vulpes macrotis mutica*)—could occur in the biological study area. The San Joaquin kit fox is a federally listed endangered species and a state-listed threatened species. Suitable foraging and denning habitat for this species is present in the biological study area. Focused surveys were done in spring/summer 2008. Four potential San Joaquin kit fox dens and three instances of scat (animal droppings) were seen in the biological study area during focused surveys in 2008; one kit fox was directly seen immediately south of the biological study area (see Figure 2-13a).

Caltrans initiated a Section 7 consultation on October 7, 2011 under the Federal Endangered Species Act with the U.S. Fish and Wildlife Service. Caltrans sent the State Route 58 Widening Project (Rosedale Highway) Biological Assessment to the U.S. Fish and Wildlife Service for review. On April 24, 2012, upon completion of the consultation process, the U.S. Fish and Wildlife Service issued a Biological Opinion for the project. The letter transmitting the Biological Assessment to U.S. Fish and Wildlife Service and the Biological Opinion from the U.S. Fish and Wildlife Service are provided in Appendix P.

The remaining 23 threatened or endangered species are not expected to occur in the biological study area due to lack of suitable habitat because they were not observed or because they are not known to occur in the immediate project vicinity.

Environmental Consequences

Build Alternative (Preferred Alternative)

San Joaquin Kit Fox: The proposed project would permanently affect 1.21 acres (0.18 acre of non-native grassland, 1.00 acre of ruderal/disturbed area, and 0.03 acre of open water/waterway) of foraging and denning habitat for this species. It would temporarily affect 6.61 acres (3.25 acres of non-native grassland, 3.30 acres of ruderal/disturbed, and 0.06 acre of open water/waterways) of foraging and denning habitat

for this species. Figures 2-13a through 2-13c show the location of a San Joaquin kit fox individual, potential, and active dens, and sign. The proposed project could permanently or temporarily affect one potential kit fox den (located within the alignment/construction area).

Indirect effects of project implementation include increased death associated with the increase in traffic volume due to vehicular strikes of kit foxes crossing the road. With implementation of avoidance and minimization measures, it is assumed that take of San Joaquin kit foxes, as defined under the California Endangered Species Act, can be avoided. Therefore, it will not be necessary for Caltrans to obtain an Incidental Take Permit or a Consistency Determination from the California Department of Fish and Game.

No-Build Alternative

There would be no change from existing conditions with the No-Build Alternative.

Avoidance, Minimization, and/or Mitigation Measures

Project design changes were developed to reduce impacts on the kit fox and could be incorporated into the design plans for the project. The main objective of the project design changes is to maintain opportunities for kit foxes to cross over the road surface while reducing the potential for an increase in vehicle strikes. Project design changes, when implemented together, are expected to reduce the potential for adverse effects on the kit fox.

The measures listed below are based on the avoidance and minimization measures provided in the Biological Opinion (U.S. Fish and Wildlife Service 2012 BO#08ESMF00-2012-F-0049-1). Based on an agreement between the City of Bakersfield and Caltrans, the City of Bakersfield will be financially responsible for putting in place the mitigation measures.

Mitigation Measures

B-7 Caltrans will include Special Provisions that include the avoidance and minimization measures of the project Biological Opinion (08ESMF00-2012-F-0049-1) in the contractor bid package during solicitation for bid information. Terms and conditions that apply to contractor activities should be conditioned in contracts for the work.

- Chemicals, lubricants, and petroleum products will be closely monitored and handling precautions will be used. All equipment will be

maintained to prevent leaks of fluids, such as gasoline, oils, or solvents. If any spills occur, cleanup will take place immediately.

- Any sensitive sites will be designated as environmentally sensitive areas (ESAs) to prevent accidental construction-related effects.
- Trees, shrubs, and other vegetation will be removed prior to the nesting season of migratory birds.
- The contractor will at all times adhere to the *State of California, Department of Transportation Standard Specifications* for avoidance of water pollution (Section 7 – 1.01G; July 1, 2008). These measures include detailed recommendations for keeping heavy machinery out of the water, limiting the amount of material (excavated or construction materials) that enter the waterway, and maintaining water flows at all times. Temporary measures may include, but are not limited to, the use of sediment basins, hay bales, and downstream silt catchment.
- A Storm Water Pollution Prevention Plan will be prepared prior to construction to reduce or eliminate any water quality reductions that might occur as a result of the project.
- Staging and refueling areas for equipment will be located a minimum of 150 feet away from any active stream channel. Equipment washing will occur where water cannot flow into a stream channel.
- Soil exposure will be minimized through use of best management practices, ground cover, and stabilization practices. Exposed dust-producing surfaces will be sprinkled daily with water until wet while avoiding producing runoff.
- The contractor will conduct maintenance of erosion and sediment control measures as needed. Inspectors will be on-site daily to monitor the need for these types of activities. All such measures will be removed after the area is stabilized or as directed by the resident engineer.
- To minimize opportunistic predatory effects to the San Joaquin kit fox, trash should be removed daily from the project area and disposed of off-site so as not to attract predator species to the project area.

- Following project completion, any and all construction debris and stockpiled materials from the project site should be removed.
- Any contractor or employee who, during routine operations and maintenance activities, inadvertently kills or injures a listed wildlife species must immediately report the incident to his representative at his contracting/employment firm and to Caltrans. This representative must contact the U.S. Fish and Wildlife Service within one calendar day.

Listed Plant Species:

- B-8 Caltrans will conduct updated full protocol-level botanical surveys during the appropriate blooming periods for the following five species: California jewel-flower (*Caulanthus californicus*), Kern mallow (*Eremalche kernensis*), San Joaquin woolly-threads (*Monolopia congdonii* [*Lambertia congdonii*]), Bakersfield cactus (*Opuntia basilaris* var. *treleasei*), and San Joaquin adobe sunburst (*Pseudobahia peirsonii*). Surveys will be undertaken prior to the start of construction if a period of five years or more passes between the end of the original spring 2008–2009 focused botanical surveys and the construction start date in order to discover any future changes in, or new additions to, the floristic composition of federally-listed plant species at the project site.

San Joaquin Kit Fox:

- B-9 Caltrans and the City of Bakersfield will follow the standard construction and operational requirements as described in the U.S. Fish and Wildlife Service's most recent available guidelines for the San Joaquin kit fox; currently this is the revised January 2011 *Standardized Measures for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance Construction and Operation Requirements* (U.S. Fish and Wildlife Service 2011).
- No less than 30 days but no more than 60 days prior to road construction, an agency-approved biologist will conduct preconstruction surveys for San Joaquin kit fox dens within 200 feet of the construction footprint, inclusive of utility relocations. A letter report and map of known and potential San Joaquin kit fox dens will be submitted to the U.S. Fish and Wildlife Service and the California Department of Fish and Game. Repeat clearance surveys will be conducted no more than 14 days before construction or after any delays in construction of over two weeks. Any new San Joaquin

kit fox dens identified in the interim will be reported to the U.S. Fish and Wildlife Service in a letter report and map. If no new San Joaquin kit fox dens are observed, an internal record will be kept that includes the survey date, the agency-approved biologist, and general survey findings. Records will be submitted to the U.S. Fish and Wildlife Service upon request.

- Disturbance to all San Joaquin kit fox dens will be avoided to the maximum extent possible. If dens or potential dens are identified within the footprint during the 60-day or 14-day preconstruction surveys, Caltrans will request to monitor and excavate those dens that are expected to be affected by the project. Active dens will not be excavated during the natal season (approximately January 1–June 14). The agency-approved biologist will monitor potential dens for three consecutive nights and submit monitoring results in a letter report to the U.S. Fish and Wildlife Service and California Department of Fish and Game and will also oversee the excavation of dens with no San Joaquin kit fox use following approval by the U.S. Fish and Wildlife Service and California Department of Fish and Game.
 - Dens found within 200 feet of project construction, but which will not be affected by construction activities, will be monitored and buffered by an exclusion zone as measured outwards from the entrance or cluster of entrances: potential or atypical dens will be protected with a 50-foot radius buffer, and known dens will be protected with a 100-foot buffer.
 - If natal/pupping dens are discovered within the action area or within 200 feet of the action area, Caltrans will immediately notify the U.S. Fish and Wildlife Service and California Department of Fish and Game.
- The agency-approved biologist will conduct a worker environmental awareness program for all construction crews prior to ground-disturbing activities with the purpose of informing all crew members of the potential for San Joaquin kit fox to occur on-site and the effects on the species by construction activities. The training will be repeated to all new crew members working in San Joaquin kit fox habitat. Crew members will sign an attendance sheet and confirm that they understand the protection measures and construction restrictions. Training materials and records of

attendees will be submitted to the U.S. Fish and Wildlife Service and California Department of Fish and Game.

- The agency-approved biologist will monitor road construction activities once per day and will verify that construction complies with the measures laid out in the Biological Opinion (08ESMF00-2012-F-0049-1), as well as construction and operation requirements described in the *U.S. Fish and Wildlife Service 2011 Revised Standard Measures for Protection of the San Joaquin Kit Fox Prior to or During Ground Disturbance Construction and Operation Requirements* (U.S. Fish and Wildlife Service 2011). The agency-approved biologist will maintain a log of daily monitoring notes that can be summarized and transmitted to the U.S. Fish and Wildlife Service and California Department of Fish and Game upon request.
- Fencing is not proposed for any portion of the State Route 58 Widening Project right-of-way. However, if it becomes necessary during a later planning stage, permeable fencing will be installed at all locations where permanent new fencing is required. One or a combination of three design options may be adopted to provide the San Joaquin kit fox with passage and movement opportunities and to minimize the potential to disrupt north-south species movement and habitat fragmentation of the project area:
 - Elevate the bottom of the fence 5 inches above ground to allow unobstructed movement by San Joaquin kit fox under the fence.
 - Install ground-level 8-inch-wide by 8-inch-high gaps no more than 100 feet apart along the length of the fence to allow for San Joaquin kit fox movement at regular intervals along the right-of-way.
 - Install fencing with a minimum mesh size of 3.5 inches by 7 inches (preferably 5 inches by 12 inches) to allow unlimited movement through the fence.
- Curbed medians are proposed to address public safety. Their height will be no greater than 10 inches. Ten-inch-high curbed medians will remain un-vegetated so as not to obstruct the visual field of the San Joaquin kit fox near the roadway. Curbed medians less than 10 inches in height and which require landscaping will be planted with low-level vegetation (i.e., less than 6 inches) that will not need mowing.

- Landscaping will be designed in conjunction with the curbed median design to allow an unobstructed view for the San Joaquin kit fox and to maintain and/or enhance opportunities for movement across the roadway. Three alternative strategies are proposed: 1) select plants that do not exceed six inches in height at maturity; 2) maintain vegetation height so that it does not exceed six inches; and/or 3) create gaps of no less than four feet wide every 12 feet in areas landscaped with trees and shrubs.
- No median barriers are currently proposed; however, if taller median barriers are required in a later planning stage for purposes of public safety, Caltrans-designed modified median barrier type 60/S will be used. Caltrans type 60/S design has been previously used (e.g., amended Biological Opinion for the State Route 99 Goshen to Kingsburg 6-lane Project, Tulare and Fresno Counties; Service File Number 81420-2009-F-0752; U.S. Fish and Wildlife Service 2009) and includes 9-inch radius openings (semicircular openings 9 inches high by 18 inches wide) spaced every 150 feet to allow passage by San Joaquin kit fox. Maintaining permeability in this manner will also reduce the potential to disrupt north-south species movement and connectivity in the project area.
- Existing San Joaquin kit fox movement corridors along the canals and railroad will be preserved through the use of existing bridges. The toe-of-road fill and bridge support walls will be maintained and new walls will be designed to be located no less than 20 feet from the centerline of both canal access roads and the railroad.
- Warning signs alerting east- and westbound drivers to potential kit fox presence are proposed on State Route 58 at several locations. Intersections under consideration include State Route 58 and Calloway Drive, Coffee Road, and Landco Drive. The need for and number of appropriate signs at intersections will continue to be evaluated as the project design advances. Proposed signage will follow Federal Highways Administration (2003) guidelines or other guidelines recommended by Caltrans.

B-10 The City of Bakersfield will compensate for the permanent loss of 1.21 acres and temporary disturbance of 6.61 acres of habitat suitable for the San Joaquin kit fox by funding the purchase of 10.90 acres (using a 3:1 compensation ratio for permanent effects and 1.1:1 ratio for temporary effects) through the Metropolitan Bakersfield Habitat Conservation Plan Trust Group.

- Prior to construction, the limits of affected habitat acreage by vegetation type will be verified and delineated on a map to be submitted for approval by the U.S. Fish and Wildlife Service and California Department of Fish and Game. This will be done prior to its submittal to the City of Bakersfield Planning Department for fee payment.
- All areas temporarily disturbed by project activities will be restored following the completion of construction.

B-11 To monitor whether the amount or extent of incidental take anticipated from implementation of the project is approached or exceeded, Caltrans should adhere to the following reporting requirements. Should this anticipated amount or extent of incidental take be exceeded, Caltrans must immediately reinstate formal consultation as per 50 Code of Federal Regulations 402.16

- For those components of the action that will result in habitat degradation or modification whereby incidental take in the form of harm is anticipated, Caltrans must provide weekly updates to the U.S. Fish and Wildlife Service with a precise accounting of the total acreage of habitat affected. Updates must also include any information about changes in the project that result in habitat disturbance not analyzed in the Biological Opinion (08ESMF00-2012-F-0049-1).
- For those components of the action that may result in direct encounters between listed species and project workers and their equipment whereby incidental take in the form of harassment, harm, injury, or death is anticipated, Caltrans must immediately contact the U.S. Fish and Wildlife Service's Sacramento Fish and Wildlife Office at the earliest possible opportunity the next working day. When injured or dead individuals of the listed species are found, Caltrans must follow the steps outlined in the *Salvage and Disposition of Individuals* section of the Biological Opinion (08ESMF00-2012-F-0049-1).
- Before construction starts on this project, the U.S. Fish and Wildlife Service must be provided with the final documents related to the protection of conservation acres, including fee payment of composition acreage. Proof of recorded easement and perpetual non-wasting endowment holdings for each sump included in the Sump Habitat

Program have long-term conservation assurances in place and do not need to be provided to the U.S. Fish and Wildlife Service prior to construction of the project. Easement and endowment documentation, as part of the Sump Habitat Program, will be established following approval of the final environmental document for the last of the six Thomas Road Improvement Program projects. The City of Bakersfield will fully fund the Sump Habitat Program within one year of that approval.

- A post-construction report detailing compliance with the project design criteria and proposed conservation measures described under the *Description of the Proposed Action* section of the Biological Opinion (08ESMF00-2012-F-0049-1) must be provided to the U.S. Fish and Wildlife Service within 30 calendar days of completion of the project. The report must shall include (1) dates of project ground-breaking and completion; (2) pertinent information concerning the success of the project in meeting compensation and other conservation measures; (3) an explanation of failure to meet such measures, if any; (4) known project effects on the San Joaquin kit fox, if any; (5) observed incidences of injury to or mortality of the San Joaquin kit fox, if any; and (6) any other pertinent information.
- New sightings of the San Joaquin kit fox or any other sensitive animal species must be reported to the California Natural Diversity Database. A copy of the reporting form and a topographic map clearly marked with the location in which the animals were observed also must be provided to the U.S. Fish and Wildlife Service.

B-12 It is recommended that Caltrans continue to include culverts, tunnels, or other structures along roads and highways, particularly in core and satellite population areas to allow for the safe passage of the San Joaquin kit fox. Such crossing structures would create safe dispersal corridors for multiple wildlife species and would help reduce road mortalities and enhance public safety. Caltrans is encouraged to explore designs and include photographs, plans, and other information in its Biological Assessments concerning incorporation of wildlife passageway designs into its projects.

2.3.5 Invasive Species

Regulatory Setting

On February 3, 1999, President Bill Clinton signed Executive Order 13112 requiring federal agencies to combat the introduction or spread of invasive species in the United States. 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 National Environmental Policy Act analysis for a project.

Affected Environment

Information in this section is summarized from the *Natural Environment Study* (March 2011).

Non-native grassland covers 64.83 acres of the biological study area. The species that dominate these grasslands are not on the California State-listed Noxious Weeds List; however, they are listed in the California Invasive Plant Council’s California Invasive Plant Inventory Database.

Environmental Consequences

Build Alternative (Preferred Alternative)

The project may include landscaping of the right-of-way. Federal requirements prohibit the planting of exotic species identified as invasive. Per Caltrans policy, none of the species on the California List of Noxious Weeds would be used for erosion control or landscaping purposes.

No-Build Alternative

There would be no change from existing conditions with the No-Build Alternative

Avoidance, Minimization, and/or Mitigation Measures

Standard Conditions

SC-14 In compliance with the Executive Order on Invasive Species (Executive Order 13112) and subsequent guidance from the Federal Highway Administration, the landscaping and erosion control included in the project would not use species listed as noxious weeds. In areas of particular sensitivity, extra

precautions shall be taken if invasive species (i.e., species listed in the California List of Noxious Weeds) are found in or adjacent to the construction areas by the monitoring biologist. These include the inspection and cleaning of construction equipment and eradication strategies to be implemented should an invasion occur. All fill material will be screened for noxious weeds and free of seed material.

Any landscape designs shall be submitted to Caltrans for review and approval by a qualified biologist during the project design phase. The review shall verify that no noxious weeds/invasive exotic plant species are used in any proposed landscaping. The reviewing biologist shall recommend suitable substitutes.

2.4 Cumulative Impacts

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 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 the California Environmental Quality Act, can be found in Section 15355 of the California Environmental Quality Act Guidelines. A definition of cumulative impacts,

under the National Environmental Policy Act, can be found in 40 Code of Federal Regulations, Section 1508.7, of the Council on Environmental Quality Regulations.

Affected Environment

The cumulative analysis focuses on the resources that the project may affect. If the project would not result in impacts to a resource, it could not contribute to a cumulative impact. The resources identified for cumulative analysis include: land use/community resources, visual resources, traffic, and biological resources. The cumulative study area for each of these resources is defined below. The affected environment for each of these resources has been previously discussed in their respective portions of Chapter 2.

- ***Biological Resources:*** The Metropolitan Bakersfield Habitat Conservation Plan was developed to address the cumulative impacts that would occur with development in the area. Therefore, the cumulative impact study area would be the Metropolitan Bakersfield Habitat Conservation Plan planning area.

This analysis considers known projects identified on the cumulative projects map maintained by the City of Bakersfield. In addition, the long-term growth projections for the area are used because they provide for future projects that would contribute to potential cumulative impacts for the project design year (2035). In addition to development projects, there are other circulation improvements that may contribute to cumulative impacts. Both the Thomas Roads Improvement Program projects and projects assumed under the Regional Traffic Impact Fee Program are part of the cumulative analysis. The Centennial Corridor would have the greatest influence because of proximity, and when completed, the Centennial Corridor would connect with State Route 58 (east). The California High-Speed Rail system would also cross through the project study area.

The analysis also looked at whether there were any large projects that would have a greater potential to contribute to cumulative impacts. There is one project in the study area—the Bakersfield Commons project—that is important for cumulative impacts, especially traffic impacts. In addition, the Stockdale Ranch Project is in the vicinity of the project, but outside of the project study area.

Each of the cumulative projects has prepared its own environmental document. The following projects have the greatest potential to influence cumulative impacts:

- The Bakersfield Commons project is a 255-acre project located east and west of Coffee Road between Brimhall Road and State Route 58. The City of Bakersfield approved the General Plan Amendment and zone change in August 2010. The Bakersfield Commons project allows 1,400,000 square feet of retail commercial, 600,000 square feet of office commercial, 345 multi-family homes, and 80 single-family homes.
- A General Plan amendment and zone change was approved for the 564-acre Stockdale Ranch project in May 2010. The project site, which is on the south side Stockdale Highway near Heath Road, will be annexed into the City of Bakersfield. The project provides for 3,583 residential units and 941,700 square feet of commercial/business park uses. Twenty acres are provided for open space-park use.
- The Centennial Corridor would connect the Westside Parkway to State Route 58 east of State Route 99. This would provide an alternate route for east-west traffic. The current forecast model assumes this connection will extend from the existing State Route 58/State Route 99 interchange (the freeway-to-freeway connection, not the Rosedale Highway interchange) to the proposed Westside Parkway/Mohawk Street interchange. The Centennial Corridor is projected to be built in 2018. Another regional Thomas Roads Improvement Program improvement that affects traffic patterns on State Route 58 is the completion of the West Beltway, which would provide a new north-south route from Taft Highway to 7th Standard Road.
- The Regional Traffic Impact Fee Program requires new development to pay a proportionate share of the cost for new and expanded transportation facilities. The program includes a range of local street improvements designed to relieve traffic congestion. These improvements, which would be built through 2035, include the widening of several north-south roadways that cross State Route 58, particularly in the western portion of the study area.
- The California High-Speed Rail system proposes the construction of over 800 miles of track that would connect major population centers. The proposed system is broken into nine segments. One of the first segments proposed for construction would be in the Central Valley from Fresno to Bakersfield. A California High-Speed Rail station is proposed for downtown Bakersfield near the existing train station. Though the California High-Speed Rail environmental document evaluated

alignment alternatives for the Fresno-to-Bakersfield segment, all the California High-Speed Rail alternatives cross State Route 58 at the existing BNSF Railway line, east of Allen Road.

Environmental Consequences

Biological Resources

As discussed above, the Bakersfield area has experienced substantial growth over the past few decades which, based on growth projections, is expected to continue in the foreseeable future. The project is one of many infrastructure and private development projects proposed or under construction in the project region. All these projects would contribute to the local and regional loss of native and non-native vegetation types within the project region that potentially provide habitat for special-status plant and wildlife species.

The Metropolitan Bakersfield Habitat Conservation Plan has been prepared by the City of Bakersfield and County of Kern in cooperation with the resource agencies to mitigate for the cumulative loss of native vegetation in the planning area. Based on the very small amount of native habitat that would be affected by the project and the project's payment of fees to the Metropolitan Bakersfield Habitat Conservation Plan, the project would not adversely contribute to the cumulative loss of native habitat.

Implementing all six Thomas Road Improvement Program projects would result in permanent and temporary impacts on San Joaquin kit fox habitat, including loss of habitat and fragmentation. The cumulative loss of kit fox habitat, in terms of acreage affected, resulting from implementation of the Thomas Road Improvement Program projects would be relatively small. However, the kit fox would be adversely affected not only by "footprint" impacts, but also by habitat fragmentation. Habitat fragmentation can result when the landscape is parceled into smaller patches of habitat through development, landscaping, and construction of roads and infrastructure. Roadway expansion could bisect safe movement corridors, reducing the probability that kit foxes could safely move from one area of suitable habitat to another in search of suitable denning and foraging habitat. Patches of undeveloped kit fox habitat, which are already highly fragmented in Bakersfield, could be sufficiently degraded by construction of new and expanded roadways and associated infrastructure that they would no longer function as suitable habitat. Reduced habitat connectivity associated with the buildout of these roadways and infrastructure could force kit foxes to use different areas for movement that could result in greater exposure to potential predators and risk of collisions with vehicles.

Implementing the Thomas Road Improvement Program projects could permanently or temporarily affect kit fox dens. Dens within the corridor could be eliminated by earthmoving activities during project grading and construction. Dens in the immediate vicinity of roads might be damaged or destroyed by vibrations from construction activities. Loss of dens could result in the displacement of kit foxes.

Building new roads, widening existing roads, and creating new interchanges at intersections would increase the potential for San Joaquin kit fox death or injury due to vehicle strikes. The potential for increased traffic volumes on new roads and widened roads would increase the potential for vehicle strikes.

Avoidance, Minimization, and/or Mitigation Measures

In addition to the project-specific avoidance, minimization, and compensatory mitigation measures, the project is proposing to mitigate for cumulative effects of six Thomas Road Improvement Program road improvement projects by implementing the Sump Habitat Program, which is intended to provide long-term habitat conservation for the urban kit fox population. The conservation goals of the program would be achieved by installing artificial dens in selected sumps, enhancing kit fox habitat by controlling vegetation in and around dens, increasing kit fox accessibility to sumps through fence/gate gaps, and reducing the potential for impacts to kit foxes associated with regular maintenance activities.

B-13 The basic conceptual framework for the Sump Habitat Program is described in the September 2010 Draft Sump Habitat Program Plan that addresses in detail five core conservation measures integral to the implementation and success of the Sump Habitat Program: (1) the selection of sumps that maintain San Joaquin kit fox accessibility and/or habitat (those of high/medium conservation priority based on the relative potential for minimizing program-level effects); (2) the installation and maintenance of San Joaquin kit fox enhancement features (fence/gate gaps, artificial dens, conservation zones, signs, and enhancement maintenance and repair); (3) the management of sump vegetation compatible with San Joaquin kit fox presence and/or use (performance of routine maintenance outside the San Joaquin kit fox natal season and the use of hand tools in conservation zones and new active dens); (4) the biological monitoring and reporting of results (pre-maintenance surveys; den monitoring and supervised den excavation; environmental awareness training; maintenance monitoring; annual enhancement inspection; annual San Joaquin kit fox sump use monitoring; and annual reporting); and (5) the provision of

long-term conservation assurances (individual conservation easements for each sump; a perpetual non-wasting endowment for management, maintenance, and monitoring costs associated with ongoing implementation; and agency-approved long-term management plan. The proposed easement and endowment holders must be U.S. Fish and Wildlife Service-approved third-party organizations). Further details in regard to these five core measures can be found in the Draft Sump Habitat Program Plan.

- The Sump Habitat Program Plan will continue to be updated, refined, and ultimately finalized through an ongoing collaborative consultation process involving Caltrans, the City of Bakersfield, the U.S. Fish and Wildlife Service, Parsons/Thomas Roads Improvement Program, and AECOM over the course of the four remaining Thomas Road Improvement Program projects.
- The finalized Sump Habitat Program will be established and put in place within one year of approval of the final environmental document for the last of the six Thomas Road Improvement Program projects. The City of Bakersfield, using federal funds, will also fully fund the Sump Habitat Program within one year of this approval. Caltrans and the City of Bakersfield will share responsibility for the Sump Habitat Program. Caltrans will adhere to the proposed avoidance and minimization measures and terms and conditions of the Biological Opinion (08ESMF00-2012-F-0049-1) and will be responsible for the overall implementation of the Sump Habitat Program. The City of Bakersfield will be responsible for enhancing sumps and conducting long-term management of the Sump Habitat Program.

There are no other anticipated cumulative impacts from the resources identified above. Therefore, no avoidance, minimization, and/or mitigation measures are required for any resources, other than the measure for San Joaquin kit fox listed above.

2.5 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, 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 by the United Nations and World Meteorological Organization in 1988, has led to increased efforts devoted to greenhouse gas emissions reduction and climate change research and policy. These efforts are mainly concerned with the emissions of greenhouse gases related to human activity that include carbon dioxide, methane, nitrous oxide, tetrafluoromethane, hexafluoroethane, sulfur hexafluoride, HFC-23 (fluoroform), HFC-134a (s, s, s, 2 – tetrafluoroethane), and HFC-152a (difluoroethane).

Typically, two terms are used when discussing the impacts of climate change. “Greenhouse Gas Mitigation” is a term for reducing greenhouse gas emissions in order to reduce or “mitigate” the impacts of climate change. “Adaptation,” refers to the effort of planning for and adapting to impacts due to climate change (such as adjusting transportation design standards to withstand more intense storms and higher sea levels)¹.

Transportation sources (passenger cars, light-duty trucks, other trucks, buses and motorcycles) in the state of California make up the largest source (second to electricity generation) of greenhouse gas emitting sources. Conversely, the main source of greenhouse gas emissions in the United States is electricity generation followed by transportation. The dominant greenhouse gas emitted is carbon dioxide (CO₂), mostly from fossil fuel combustion.

There are four main strategies for reducing greenhouse gas emissions from transportation sources: (1) improve system and operation efficiencies, (2) reduce growth of vehicle miles traveled, (3) transition to lower greenhouse gas fuels, and (4) improve vehicle technologies. To be most effective, all four should be pursued collectively. The following regulatory setting section outlines state and federal efforts to comprehensively reduce greenhouse gas emissions from transportation sources.

¹ http://climatechange.transportation.org/ghg_mitigation/

Regulatory Setting

State

With the passage of several pieces of legislation including state senate and assembly bills and executive orders, California launched an innovative and proactive approach to dealing with greenhouse gas emissions and climate change at the state level.

Assembly Bill 1493, Pavley. Vehicular Emissions: Greenhouse Gases (Assembly Bill 1493), 2002: requires the California Air Resources Board to develop and implement regulations to reduce automobile and light-truck greenhouse gas emissions. These stricter emissions standards were designed to apply to automobiles and light trucks beginning with the 2009-model year. In June 2009, the U.S. Environmental Protection Agency Administrator granted a Clean Air Act waiver of preemption to California. This waiver allowed California to implement its own greenhouse gas emission standards for motor vehicles beginning with model year 2009. California agencies will be working with federal agencies to conduct joint rulemaking to reduce greenhouse gas emissions for passenger cars model years 2017-2025.

Executive Order S-3-05: (signed on June 1, 2005, by then-Governor Arnold Schwarzenegger) the goal of this executive order is to reduce California's greenhouse gas emissions to: 1) 2000 levels by 2010, 2) 1990 levels by the 2020, and 3) 80 percent below the 1990 levels by the year 2050. In 2006, this goal was further reinforced with the passage of Assembly Bill 32.

Assembly Bill 32, the Global Warming Solutions Act of 2006: Assembly Bill 32 sets the same overall greenhouse gas emissions reduction goals as outlined in Executive Order S-3-05, while further mandating that the California Air Resources Board create a plan that includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06 further directs state agencies to begin implementing Assembly Bill 32, including the recommendations made by the State's Climate Action Team.

Executive Order S-01-07: Then-Governor Schwarzenegger set forth the low carbon fuel standard for California. Under this executive order, the carbon intensity of California's transportation fuels is to be reduced by at least 10 percent by 2020.

Senate Bill 97 (Chapter 185, 2007): required the Governor's Office of Planning and Research to develop recommended amendments to the State California Environmental Quality Act Guidelines for addressing greenhouse gas emissions. The amendments became effective on March 18, 2010.

California Environmental Quality Act Guidelines (Section 15064.4): As recommended by Senate Bill 97, Section 15064.4 was added to the California Environmental Quality Act Guidelines to provide guidance for determining the significance of impacts from greenhouse gas emissions. The Guidelines require the lead agency, which for this project would be the City of Bakersfield, to “make a good-faith effort, based to the extent possible on scientific and factual data, to describe, calculate or estimate the amount of greenhouse gas emissions resulting from a project.” The lead agency has discretion to determine the appropriate methodology.

Federal

Although climate change and greenhouse gas reduction are a concern at the federal level, currently no regulation or legislation has been enacted specifically addressing greenhouse gas emissions reductions and climate change at the project level. Neither the U.S. Environmental Protection Agency nor the Federal Highway Administration has promulgated explicit guidance or methodology to conduct project-level greenhouse gas analysis. As stated on the Federal Highway Administration’s climate change website (<http://www.fhwa.dot.gov/hep/climate/index.htm>), climate change considerations should be integrated throughout the transportation decision-making process—from planning through project development and delivery. Addressing climate change mitigation and adaptation up front in the planning process will facilitate decision-making and improve efficiency at the program level, and will inform the analysis and stewardship needs of project-level decision-making. Climate change considerations can easily be integrated into many planning factors, such as supporting economic vitality and global efficiency, increasing safety and mobility, enhancing the environment, promoting energy conservation, and improving the quality of life.

The four strategies set forth by the Federal Highway Administration to lessen climate change impacts do correlate with efforts that the State has undertaken and is undertaking to deal with transportation and climate change; the strategies include improved transportation system efficiency, cleaner fuels, cleaner vehicles, and reduction in the growth of vehicle hours travelled.

Climate change and its associated effects are also being addressed through various efforts at the federal level to improve fuel economy and energy efficiency, such as the “National Clean Car Program” and Executive Order 13514- *Federal Leadership in Environmental, Energy and Economic Performance*.

Executive Order 13514 is focused on reducing greenhouse gases internally in federal agency missions, programs and operations, but also directs federal agencies to participate in the interagency Climate Change Adaptation Task Force, which is engaged in developing a U.S. strategy for adaptation to climate change.

On April 2, 2007, in *Massachusetts v. EPA*, 549 U.S. 497 (2007), the Supreme Court found that greenhouse gases are air pollutants covered by the Clean Air Act and that the U.S. Environmental Protection Agency has the authority to regulate greenhouse gases. The court held that the U.S. Environmental Protection Agency Administrator must determine whether or not emissions of greenhouse gases from new motor vehicles cause or contribute to air pollution that may reasonably be anticipated to endanger public health or welfare, or whether the science is too uncertain to make a reasoned decision.

On December 7, 2009, the U.S. Environmental Protection Agency Administrator signed two distinct findings on greenhouse gases under Section 202(a) of the Clean Air Act:

- **Endangerment Finding:** The Administrator found that the current and projected concentrations of the six key well-mixed greenhouse gases—carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulfur hexafluoride (SF₆)—in the atmosphere threaten the public health and welfare of current and future generations.
- **Cause or Contribute Finding:** The Administrator found that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution that threatens public health and welfare.

Although these findings did not themselves impose any requirements on industry or other entities, this action was a prerequisite to finalizing the U.S. Environmental Protection Agency's *Proposed Greenhouse Gas Emission Standards for Light-Duty Vehicles*, which was published on September 15, 2009.² On May 7, 2010, the final *Light-Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards* was published in the Federal Register.

² <http://www.epa.gov/climatechange/endangerment.html>

The U.S. Environmental Protection Agency and the National Highway Traffic Safety Administration are taking coordinated steps to enable the production of a new generation of clean vehicles with reduced greenhouse gas emissions and improved fuel efficiency from on-road vehicles and engines. These next steps include developing the first-ever greenhouse gas regulations for heavy-duty engines and vehicles, as well as additional light-duty vehicle greenhouse gas regulations. These steps were outlined by President Barack Obama in a memorandum on May 21, 2010.³

The final combined U.S. Environmental Protection Agency and National Highway Traffic Safety Administration standards that make up the first phase of this national program apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. The standards require these vehicles to meet an estimated combined average emissions level of 250 grams of carbon dioxide per mile, equivalent to 35.5 miles per gallon if the automobile industry were to meet this carbon dioxide level solely through fuel economy improvements. Together, these standards will cut greenhouse gas emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012-2016).

On January 24, 2011, the U.S. Environmental Protection Agency along with the U.S. Department of Transportation and the State of California announced a single timeframe for proposing fuel economy and greenhouse gas standards for model year 2017-2025 cars and light-trucks. Proposing the new standards in the same timeframe (September 1, 2011) signals continued collaboration that could lead to an extension of the current National Clean Car Program.

Project Analysis

An individual project does not generate enough greenhouse gas emissions to significantly influence global climate change. Rather, global climate change is a cumulative impact. This means that a project may participate in a potential impact through its incremental contribution combined with the contributions of all other sources of greenhouse gases.⁴ In assessing cumulative impacts, it must be determined if a project's incremental effect is "cumulatively considerable." See California

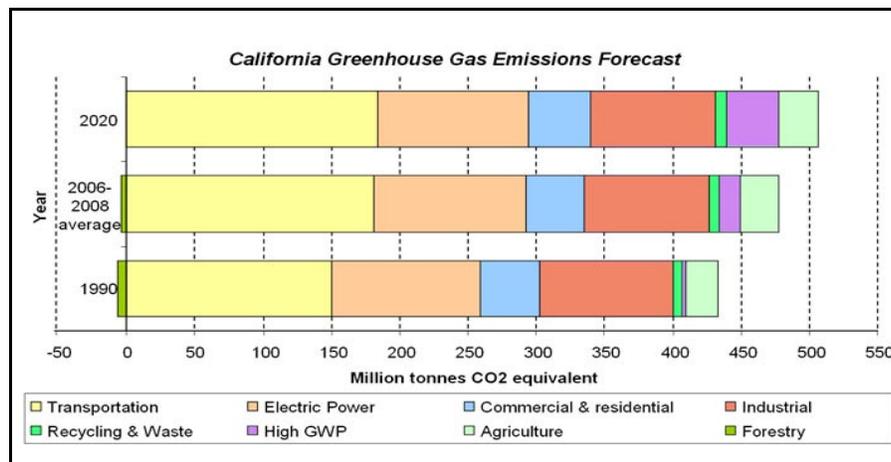
³ <http://epa.gov/otaq/climate/regulations.htm>

⁴ 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 California Environmental Quality Act Guide, April 2011) and the U.S. Forest Service (Climate Change Considerations in Project Level National Environmental Policy Act Analysis, July 13, 2009).

Environmental Quality Act 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.

The Assembly Bill 32 Scoping Plan contains the main strategies California will use to reduce greenhouse gases. As part of its supporting documentation for the Draft Scoping Plan, the California Air Resources Board released the greenhouse gas inventory for California (Forecast last updated: 28 October 2010). The forecast is an estimate of the emissions expected to occur in the 2020 if none of the foreseeable measures included in the Scoping Plan were implemented. The base year used for forecasting emissions is the average of statewide emissions in the greenhouse gas inventory for 2006, 2007, and 2008.

Figure 2-14 California Greenhouse Gas Forecast



Source: <http://www.arb.ca.gov/cc/inventory/data/forecast.htm>

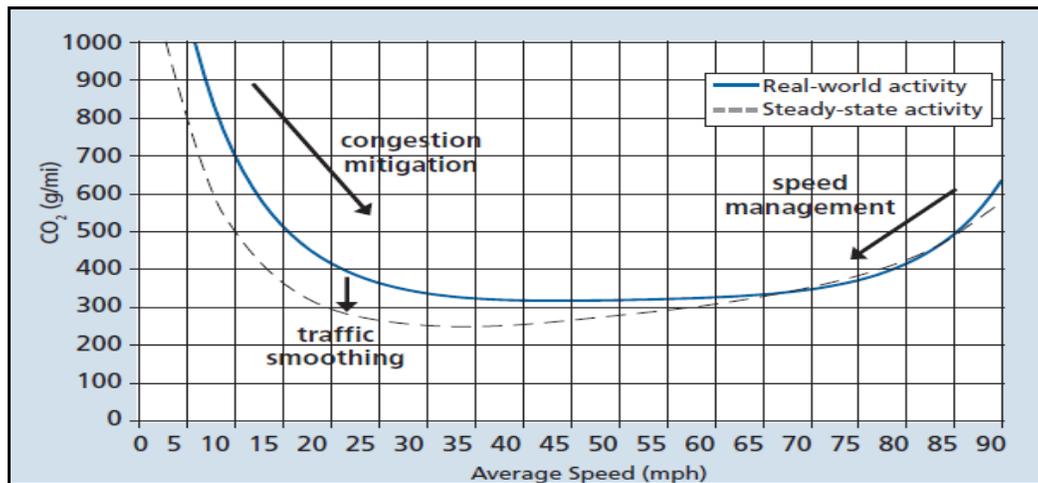
The City of Bakersfield, as the California Environmental Quality Act lead agency, has followed the process developed by Caltrans for assessing impacts associated with greenhouse gas emissions. Caltrans and its parent agency, the Business, Transportation, and Housing Agency, have taken an active role in addressing greenhouse gas emission reduction and climate change. Recognizing that 98 percent of California's greenhouse gas emissions are from the burning of fossil fuels and 40 percent of all human made greenhouse gas emissions are from transportation, Caltrans has created and is implementing the Climate Action Program at Caltrans that was

published in December 2006 (see Climate Action Program at Caltrans, December 2006).⁵

Project- and regional-specific information presented in this section is based on the *State Route 58 Widening Project Air Quality Study Report* (June 2011).

One of the main strategies in Caltrans' Climate Action Program to reduce greenhouse gas emissions is to make California's transportation system more efficient. The highest levels of carbon dioxide 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 2-15). To the extent that a project relieves congestion by enhancing operations and improving travel times in high congestion travel corridors, greenhouse emissions, particularly carbon dioxide, may be reduced.

Figure 2-15 Possible Effect of Traffic Operation Strategies in Reducing On-Road Carbon Dioxide Emission



Source: Traffic Congestion and Greenhouse Gases: Matthew Barth and Kanok Boriboonsoms (TR News 268 May-June 2010) <<http://onlinepubs.trb.org/onlinepubs/trnews/trnews268.pdf>

Many studies show that an increase in traffic volume is related to higher overall carbon dioxide emissions. Traffic volumes are expected to increase under future conditions; however, operation of the project would increase traffic speed and flow, decrease congestion, and improve level of service along the project alignment.

⁵ Caltrans Climate Action Program is located at the following web address:
http://www.dot.ca.gov/hq/tpp/offices/ogm/key_reports_files/State_Wide_Strategy/Caltrans_Climate_Action_Program.pdf

Widening the highway would increase traffic capacity, which tends to reduce congestion. Restoration of a free-flowing traffic pattern would reduce the amount of carbon dioxide emissions.

According to the 2011 Final Regional Transportation Plan, the Kern Council of Governments has invested significant resources adding signals in place of four-way stops, synchronizing signals, monitoring traffic, and providing a metropolitan traffic operations center. Significant reductions in vehicle emissions resulting from unnecessary idling and acceleration have been realized. According to state and federal Clean Air Acts, the worst non-attainment areas must ensure that “all feasible measures” be implemented to reduce harmful air emissions. A goal of the 2011 Final Regional Transportation Plan focuses on carrying out these requirements to achieve required standards for healthy air.

The Kern Council of Governments existing transportation control measures have focused on traffic flow improvements to attain its goals. Since 1990, the region’s congestion, measured by vehicle miles traveled, has increased at a rate 25 percent faster than the population. However, during the 1990s, the average annual growth in vehicle miles traveled slowed from the 1980s, decreasing from 750,000 vehicle miles traveled per year to 500,000 vehicle miles traveled per year.

In its 2007 Ozone Plan, the San Joaquin Valley Air Pollution Control District proposed the adoption of an Employer-Based Trip Reduction rule that would further decrease vehicle miles traveled within the basin by:

- Requiring businesses with at least 100 employees to establish rideshare programs
- Scheduling rule development and implementation as follows: adoption by the fourth quarter 2009, and compliance/reductions to begin by 2010
- Implementing trip reduction programs following the U.S. Environmental Protection Agency guidelines for improving air quality (also known as the State Implementation Plan)
- Exploring the applicability of state laws governing parking payout programs and strengthening enforcement of those laws within the valley

The San Joaquin Valley Air Pollution Control District adopted Rule 9410, Employer-Based Trip Reduction, on December 17, 2009.

Implementation of the plans and programs stated above are designed to decrease vehicle miles traveled, reduce congestion at intersections, and improve traffic flow

throughout the region. With these improvements, carbon dioxide emissions are expected to decrease from the vehicles using the roadway.

As discussed in Section 1.2.4, Alternatives Considered but Eliminated from Further Discussion, several alternatives were considered but not carried forward because they did not meet the project objectives or were not possible because they would cost more than available funding. The eliminated alternatives included a build alternative and a transportation system management alternative. Though the transportation system management alternative was not carried forward as a separate alternative, components of the alternative, such as signal optimization, have been incorporated into the Build Alternative.

Quantitative Analysis

A quantitative analysis estimating carbon dioxide emissions for existing, no-build, and build conditions was performed using Caltrans' CT-EMFAC. Inputs used to estimate carbon dioxide emissions were peak and off-peak total vehicle miles traveled, vehicle mix, and vehicle miles traveled distribution by speed for the Kern County region. The results are shown in Table 2.23.

Table 2.23 Carbon Dioxide Emissions (tons per day)

Pollutant	Existing	No-Build 2015	Build 2015	No-Build 2035	Build 2035
Carbon Dioxide Emissions	2,504	2,768	2,711	4,268	4,270

Carbon dioxide emissions are expected to increase from existing conditions to 2035 conditions due to increases in total vehicle miles traveled. In future 2015 conditions, vehicle miles traveled decreases from no-build conditions to build conditions, resulting in a decrease of carbon dioxide emissions for build 2015 conditions. However, in future 2035 conditions, the total vehicle miles traveled is expected to increase from no-build to build conditions; therefore, there is a slight increase of carbon dioxide emissions. In both cases, the differences shown are well within the assumptions and accuracy of the traffic and emissions models. The conclusion is that the implementation of the project would result in reduced carbon dioxide (CO₂) emissions for 2015 when compared to the no-build conditions, while the future 2035 build conditions would result in a slight increase of carbon dioxide emissions when compared to the future no-build conditions.

The estimated emissions shown in Table 2.23 are calculated for only a comparison between alternatives. The numbers are not necessarily an accurate reflection of what the true carbon dioxide emissions will be because carbon dioxide emissions are dependent on other factors that are not part of the model, such as the fuel mix (EMFAC model emission rates are only for direct engine-out carbon dioxide emissions not full fuel cycle; fuel cycle emission rates can vary dramatically depending on the amount of additives like ethanol and the source of the fuel components), rate of acceleration, and the aerodynamics and efficiency of the vehicles.

Limitations and Uncertainties with Modeling

EMFAC

Although the Emission Factor Model can calculate carbon dioxide emissions from mobile sources, the model does have limitations when it comes to accurately reflecting carbon dioxide emissions. According to the National Cooperative Highway Research Program report, *Development of a Comprehensive Modal Emission Model* (April 2008), studies have revealed that brief but rapid accelerations can contribute significantly to a vehicle's carbon monoxide and hydrocarbon emissions during a typical urban trip. Current emission-factor models are insensitive to the distribution of such modal events (i.e., cruise, acceleration, deceleration, and idle) in the operation of a vehicle and instead estimate emissions by average trip speed. This limitation creates an uncertainty in the model's results when compared to the estimated emissions of the various alternatives with baseline in an attempt to determine impacts. Although work by the U.S. Environmental Protection Agency and the California Air Resources Board is underway on modal-emission models, neither agency has yet approved a modal emissions model that can be used to conduct this more accurate modeling. In addition, the Emission Factor Model does not include speed corrections for most vehicle classes for carbon dioxide—for most vehicle classes, emission factors are held constant, which means that the Emission Factor Model is not sensitive to the decreased emissions associated with improved traffic flows for most vehicle classes. Therefore, unless a project involves a large number of heavy-duty vehicles, the difference in modeled carbon dioxide emissions due to speed change will be slight.

The California Air Resources Board is currently not using the Emission Factor Model to create its inventory of greenhouse gas emissions. It is unclear why the California Air Resources Board has made this decision. Its website states only:

REVISION: Both the Emission Factor and OFFROAD Models develop carbon dioxide (CO₂) and methane (CH₄) emission estimates; however, they are not currently used as the basis for the California Air Resources Board's official greenhouse gas inventory which is based on fuel usage information. (<http://www.arb.ca.gov/cc/inventory/inventory.htm>). However, the California Air Resources Board is working towards reconciling the emission estimates from the fuel usage approach and the models.

Other Variables

With the current science, project-level analysis of greenhouse gas emissions is limited. Although a greenhouse gas analysis is included for this project, there are numerous key greenhouse gas variables that are likely to change dramatically during the design life of the proposed project and would thus dramatically change the projected carbon dioxide emissions.

First, vehicle fuel economy is increasing. The U.S. Environmental Protection Agency's annual report, *Light-Duty Automotive Technology and Fuel Economy Trends: 1975 through 2008* (<http://www.epa.gov/oms/fetrends.htm>), which provides data on the fuel economy and technology characteristics of new light-duty vehicles including cars, minivans, sport utility vehicles and pickup trucks, confirms that average fuel economy has improved each year beginning in 2005 and is now the highest since 1993. Most of the increase since 2004 is due to higher fuel economy for light trucks, following a long-term trend of slightly declining overall fuel economy that peaked in 1987. These vehicles also have a slightly lower market share, peaking at 52 percent in 2004 with projections at 48 percent in 2008. Table 2.24 shows the alternatives for vehicle fuel economy increases studied by the National Highway Traffic Safety Administration in its Final Environmental Impact Study for New Corporate Average Fuel Economy (CAFE) Standards (October 2008).

Table 2.24 Model Year 2015 Required Miles Per Gallon by Alternative

No Action		25% Below Optimized	Optimized (Preferred)	25% Above Optimized	50% Above Optimized	Total Costs Equal Total Benefits	Technology Exhaustion
Cars	27.5	33.9	35.7	37.5	39.5	43.3	52.6
Trucks	23.5	27.5	28.6	29.8	30.9	33.1	34.7

Source: National Highway Traffic Safety Administration, 2008.

Second, near zero carbon vehicles will come into the market during the design life of this project. According to a March 2008 report released by University of California,

Davis (UC Davis) Institute of Transportation Studies entitled *Why Hydrogen and Fuel Cells are Needed to Support California Climate Policy*:

Large advancements have occurred in fuel cell vehicle and hydrogen infrastructure technology over the past 15 years. Fuel cell technology has progressed substantially resulting in power density, efficiency, range, cost, and durability all improving each year. In another sign of progress, automotive developers are now demonstrating over 100 fuel cell vehicles (FCVs) in California – several in the hands of the general public – with configurations designed to be attractive to buyers. Cold-weather operation and vehicle range challenges are close to being solved, although vehicle cost and durability improvements are required before a commercial vehicle can be successful without incentives. The pace of development is on track to approach pre-commercialization within the next decade.

A number of the U.S. Department of Energy 2010 milestones for fuel cell vehicles development and commercialization are expected to be met by 2010. Accounting for a five to six year production development cycle, the scenarios developed by the U.S. Department of Energy suggest that 10,000s of vehicles per year from 2015 to 2017 would be possible in a federal demonstration program, assuming large cost share grants by the government and industry are available to reduce the cost of production vehicles.

Third and as previously stated, California adopted a low-carbon fuel standard in 2009 to reduce the carbon intensity of transportation fuels by 10 percent by 2020. The regulation became effective on January 12, 2010 (codified in title 17, California Code of Regulations, Sections 95480-95490). Beginning January 1, 2011, transportation fuel producers and importers must meet specified average carbon intensity requirements for fuel in each calendar year.

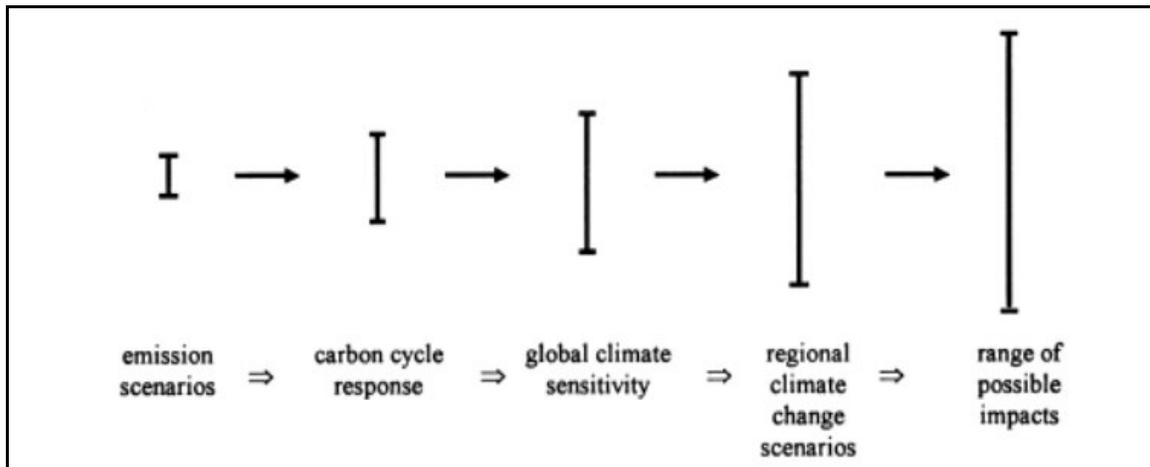
Fourth, driver behavior has been changing as the U.S. economy and oil prices have changed. In its January 2008 report, *Effects of Gasoline Prices on Driving Behavior and Vehicle Market* (<http://www.cbo.gov/ftpdocs/88xx/doc8893/01-14-GasolinePrices.pdf>), the Congressional Budget Office found the following results based on data collected from California: 1) freeway motorists have adjusted to higher gas prices by making fewer trips and driving more slowly; 2) the market share for sports utility vehicles is declining; and 3) the average prices for larger, less-fuel-efficient models have declined over the past five years as average prices for the most-

fuel-efficient automobiles have risen, showing an increase in demand for the more fuel-efficient vehicles.

Limitations and Uncertainties with Impact Assessment

Figure 2-16, taken from the *National Highway Traffic Safety Administration Final EIS for New CAFE Standards* (October 2008), shows how the range of uncertainties in assessing greenhouse gas impacts grows with each step of the analysis. The report states: “Cascade of uncertainties typical in impact assessments showing the ‘uncertainty explosion’ as these ranges are multiplied to encompass a comprehensive range of future consequences, including physical, economic, social, and political impacts and policy responses.”

Figure 2-16 Cascades of Uncertainty



Much of the uncertainty in assessing an individual project’s impact on climate change surrounds the global nature of the climate change. Even assuming that the target of meeting the 1990 levels of emissions is met, there is no regulatory or other framework in place that would allow for a ready assessment of what any modeled increase in carbon dioxide emissions would mean for climate change given the overall California greenhouse gas emissions inventory of approximately 430 million tons of carbon dioxide equivalent. This uncertainty only increases when viewed globally.

The Intergovernmental Panel on Climate Change has created multiple scenarios in its document entitled *Climate Change 2007: The Physical Science Basis: Summary for Policy Makers* to project potential future global greenhouse gas emissions as well as to evaluate potential changes in global temperature, other climate changes, and their effect on human and natural systems. These scenarios vary in terms of the type of

economic development, the amount of overall growth, and the steps taken to reduce greenhouse gas emissions. Non-mitigation Intergovernmental Panel on Climate Change scenarios project an increase in global greenhouse gas emissions by 9.7 up to 36.7 billion metric tons carbon dioxide from 2000 to 2030, which represents an increase of between 25 and 90 percent.

The assessment is further complicated by the fact that changes in greenhouse gas emissions can be difficult to attribute to a particular project because the projects often cause shifts in the locale for some type of greenhouse gas emissions, rather than causing “new” greenhouse gas emissions. It is difficult to assess the extent to which any project-level increase in carbon dioxide emissions represents a net global increase, reduction, or no change; there are no models approved by regulatory agencies that operate at the global or even statewide scale.

The complexities and uncertainties associated with project-level impact analysis are further borne out in the Final Environmental Impact Statement completed by the National Highway Traffic Safety Administration addressing the Corporate Average Fuel Economy (CAFE) Standards (October 2008). As the text quoted below shows, even when dealing with greenhouse gas emission scenarios on a national scale for the entire passenger car and light-truck fleet, the numerical differences among alternatives is very small and well within the error sensitivity of the model.

In analyzing across the CAFE 30 alternatives, the mean change in the global mean surface temperature, as a ratio of the increase in warming between the B1 (low) to A1B (medium) scenarios, ranges from 0.5 percent to 1.1 percent. The resulting change in sea level rise (compared to the No Action Alternative) ranges, across the alternatives, from 0.04 centimeter to 0.07 centimeter. In summary, the impacts of the model year 2011-2015 CAFE alternatives on global mean surface temperature, sea level rise, and precipitation are relatively small in the context of the expected changes associated with the emission trajectories. This is due primarily to the global and multi-sectoral nature of the climate problem. Emissions of CO₂, the primary gas driving the climate effects, from the United States automobile and light truck fleet represented about 2.5 percent of total global emissions of all greenhouse gases in the year 2000 (EPA, 2008; CAIT, 2008). While a significant source, this is a still small percentage of global emissions, and the relative contribution of CO₂ emissions from the United States light vehicle fleet is expected to decline in the future,

due primarily to rapid growth of emissions from developing economies (which are due in part to growth in global transportation sector emissions).

Construction Emissions

Greenhouse gas emissions for transportation projects can be divided into those produced during construction and those produced during operations. Construction greenhouse gas emissions include emissions produced as a result of material processing, emissions produced by on-site construction equipment, and emissions arising from 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 greenhouse gas emissions produced during construction can be mitigated to some degree by longer intervals between maintenance and rehabilitation events.

California Environmental Quality Act Conclusion

As discussed above, both the future with-project and future no-build show increases in carbon dioxide (CO₂) emissions over the existing levels; the future build carbon dioxide (CO₂) emissions are higher than the future no-build emissions. In addition, as discussed above, there are also limitations with the Emission Factor Model and with assessing what a given carbon dioxide (CO₂) emissions increase means for climate change. Therefore, it is the City of Bakersfield's determination that in the absence of further regulatory or scientific information related to greenhouse gas emissions and California Environmental Quality Act 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, the City is firmly committed to implementing measures to help reduce the potential effects of the project. These measures are outlined in the following section.

Greenhouse Gas Reduction Strategies

Assembly Bill 32 Compliance

Caltrans continues to be actively involved on the Governor's Climate Action Team as the California Air Resources Board works to implement the Executive Orders S-3-05 and S-01-07 and help achieve the targets set forth in Assembly Bill 32. Many of the strategies Caltrans is using to help meet the targets in Assembly Bill 32 come from the

California Strategic Growth Plan, which is updated each year. Former Governor Arnold Schwarzenegger's Strategic Growth Plan calls for a \$222 billion infrastructure improvement program to fortify the state's transportation system, education, housing, and waterways, including \$100.7 billion in transportation funding during the next decade. The Strategic Growth Plan targets a significant decrease in traffic congestion below today's level and a corresponding reduction in greenhouse gas emissions. The Strategic Growth Plan proposes to do this while accommodating growth in population and the economy. A suite of investment options has been created that combined together are expected to reduce congestion. The Strategic Growth Plan relies on a complete systems approach to attain carbon dioxide reduction goals: system monitoring and evaluation, maintenance and preservation, smart land use and demand management, and operational improvements (see Figure 2-17: The Mobility Pyramid).

Figure 2-17 Mobility Pyramid



The City of Bakersfield is supporting efforts to reduce vehicle miles traveled by planning and implementing smart land use strategies: job/housing proximity, developing transit-oriented communities, and high-density housing along transit corridors. Caltrans also works closely with local jurisdictions on planning activities; however, Caltrans does not have local land use planning authority. Caltrans is also supporting efforts to improve the energy efficiency of the transportation sector by increasing vehicle fuel economy in new cars, light- and heavy-duty trucks; Caltrans is doing this by supporting ongoing research efforts at universities, by supporting

legislative efforts to increase fuel economy, and by participating on the Climate Action Team.

It is important to note, however, that control of the fuel economy standards is held by the U.S. Environmental Protection Agency and the California Air Resources Board. Lastly, the use of alternative fuels is also being considered; Caltrans is participating in funding for alternative fuel research at the University of California, Davis.

Table 2.25 summarizes the Caltrans and statewide efforts that Caltrans is implementing to reduce greenhouse gas emissions. More detailed information about each strategy is included in the Climate Action Program at Caltrans (December 2006).

Table 2.25 Climate Change/Carbon Dioxide Reduction Strategies

Strategy	Program	Partnership		Method/Process	Estimated Carbon Dioxide Savings (million miles traveled)	
		Lead	Agency		2010	2020
Smart Land Use	Intergovernmental Review (IGR)	Caltrans	Local Governments	Review and seek to mitigate development proposals	Not Estimated	Not Estimated
	Planning Grants	Caltrans	Local and regional agencies and other stakeholders	Competitive selection process	Not Estimated	Not Estimated
	Regional Plans and Blueprint Planning	Regional Agencies	Caltrans	Regional plans and application process	0.975	7.8
Operational Improvements and Intelligent Transportation System (ITS) Deployment	Strategic Growth Plan	Caltrans	Regions	State ITS; Congestion Management Plan	0.007	2.17
Mainstream Energy and Greenhouse Gases into Plans and Projects	Office of Policy Analysis and Research; Division of Environmental Analysis	Interdepartmental effort		Policy establishment, guidelines, technical assistance	Not Estimated	Not Estimated
Educational and Information Program	Office of Policy Analysis and Research	Interdepartmental, California Environmental Protection Agency, California Air Resources Board, California Energy Commission		Analytical report, data collection, publication, workshops, outreach	Not Estimated	Not Estimated
Fleet Greening and Fuel Diversification	Division of Equipment	Department of General Services		Fleet Replacement B20 B100	0.0045	0.0065 0.45 0.0225

Strategy	Program	Partnership		Method/Process	Estimated Carbon Dioxide Savings (million miles traveled)	
		Lead	Agency		2010	2020
Non-vehicular Conservation Measures	Energy Conservation Program	Green Action Team		Energy Conservation Opportunities	0.117	0.34
Portland Cement	Office of Rigid Pavement	Cement and Construction Industries		2.5 percent limestone cement mix 25 percent fly ash cement mix > 50 percent fly ash/slag mix	1.2 0.36	4.2 3.6
Goods Movement	Office of Goods Movement	California Environmental Protection Agency; California Air Resources Board; Business Transportation and Housing Agency; Metropolitan Planning Organizations		Goods Movement Action Plan	Not Estimated	Not Estimated
Total					2.66	18.67

Source: Air Quality Study 2011

To the extent that it is applicable or feasible for the project and through coordination with the project development team, the following measures were considered for inclusion in the project to reduce the greenhouse gas emissions and potential climate change impacts from the project:

- Use of Reclaimed Water—Currently 30 percent of the electricity used in California is used for the treatment and delivery of water. Use of reclaimed water helps conserve this energy, reducing greenhouse gas emissions from electricity production. Reclaimed water is not currently available along State Route 58; however, reclaimed water suitable for irrigation should become available prior to building the final phase of the project.
- Landscaping—Landscaping reduces surface warming and through photosynthesis decreases carbon dioxide. Replacement landscaping is provided for in the project.
- Portland Cement—Use of lighter colored surfaces such as Portland cement helps to reduce the albedo effect (measure of how much light a surface reflects) and cool the surface; in addition, Caltrans has been a leader in the effort to add fly ash to Portland cement mixes. Adding fly ash reduces the greenhouse gas emissions associated with cement production— it also can make the pavement stronger. Use of Portland cement in the curbs, gutters, and sidewalks for the roadway widening is feasible and has been included as a mitigation measure. Also, Portland cement should be considered when building the grade-separation.

- Lighting—Use of energy efficient lighting, such as light emitting diode (LED) traffic signals saves electricity. This measure is feasible and has been included as a mitigation measure
- Idling restrictions—Idling restrictions for trucks and equipment at construction sites reduces fuel usage. Idling restrictions for trucks and equipment at construction sites is already provided for as a construction noise measure (SC-13).

As described in Section 1.2.1, Build Alternative, a grade separation over the San Joaquin Valley Railroad would be built in 2025. The implementation of this feature would substantially reduce congestion and idling at this location, thereby reducing carbon dioxide emissions.

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. Climate change is expected to produce increased variability in precipitation, rising temperatures, rising sea levels, storm surges and intensity, and the frequency and intensity of wildfires. These changes may affect the transportation infrastructure in various ways, such as damaging roadbeds by 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. There may also be economic and strategic ramifications as a result of these types of impacts to the transportation infrastructure.

Climate change adaptation must also involve the natural environment as well. Efforts are underway on a statewide level to develop strategies to cope with impacts to habitat and biodiversity through planning and conservation. The results of these efforts will help California agencies plan and implement mitigation strategies for programs and projects.

On November 14, 2008, then-Governor Schwarzenegger signed Executive Order S-13-08, which directed a number of state agencies to address California’s vulnerability to sea level rise caused by climate change.

The California Resources Agency (now the California Natural Resources Agency), through the interagency Climate Action Team, was directed to coordinate with local, regional, state, and federal public and private entities to develop a state Climate

Adaptation Strategy. The Climate Adaptation Strategy will summarize the best known science on climate change impacts to California, assess California's vulnerability to the identified impacts, and then outline solutions that can be implemented within and across state agencies to promote resiliency.

As part of its development of the Climate Adaptation Strategy, the California Natural Resources Agency was directed to request the National Academy of Science to prepare a *Sea Level Rise Assessment Report* by December 2010 (now scheduled to be released in 2012) to advise how California should plan for future sea level rise. The report is to include the following:

- Relative sea level rise projections for California, taking into account coastal erosion rates, tidal impacts, El Niño and La Niña events, storm surge, and land subsidence rates
- Range of uncertainty in selected sea level rise projections
- 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
- Discussion of future research needs regarding sea level rise for California

Furthermore Executive Order S-13-08 directed the Business, Transportation, and Housing Agency to prepare a report to assess vulnerability of transportation systems to sea level rise affecting safety, maintenance, and operational improvements of the system and the economy of the state. Caltrans continues to work on assessing the transportation system vulnerability to climate change, including the effect of sea level rise.

Prior to the release of the final *Sea Level Rise Assessment Report*, all state agencies that are planning to build projects in areas vulnerable to future sea level rise were directed to consider a range of sea level rise scenarios for the years 2050 and 2100 to assess project vulnerability and, to the extent feasible, reduce expected risks and increase resiliency to sea level rise. However, all projects that have filed a Notice of Preparation and/or are programmed for construction funding from 2008 through 2013, or are routine maintenance projects as of the date of Executive Order S-13-08 may, but are not required to, consider these planning guidelines.

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, storm surge and storm wave data. (Executive Order S-13-08 allows some exceptions to this

planning requirement.) The project is in Kern County, which is not one of the coastal counties mentioned in the Final Paper-*The Impacts of Sea-Level Rise on the California Coast*.

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 an active participant in the efforts being made as part of then-Governor Schwarzenegger's Executive Order on Sea Level Rise and is mobilizing to be able to respond to the National Academy of Science report on *Sea Level Rise Assessment*, due for release by December 2010.

On August 3, 2009, the California Natural Resources Agency in cooperation and partnership with multiple state agencies released the 2009 California Climate Adaptation Strategy Discussion Draft, which summarizes the best-known science on climate change impacts in seven specific sectors and provides recommendations on how to manage against those threats. The release of the draft document set in motion a 45-day public comment period. Led by the California Natural Resources Agency, numerous other state agencies were involved in the creation of discussion draft, including Environmental Protection; Business, Transportation and Housing; Health and Human Services; and the Department of Agriculture.

The discussion draft focuses on sectors that include: public health; biodiversity and habitat; ocean and coastal resources; water management; agriculture; forestry; and transportation and energy infrastructure. The strategy is in direct response to then-Governor Schwarzenegger's November 2008 Executive Order S-13-08 that specifically asked the California Natural Resources Agency to identify how state agencies can respond to rising temperatures, changing precipitation patterns, sea level rise, and extreme natural events. As data continues to be developed and collected, the state's adaptation strategy will be updated to reflect current findings. A revised version of the report was posted on the California Natural Resource Agency website on December 2, 2009 at: <http://www.energy.ca.gov/2009publications/CNRA-1000-2009-027/CNRA-1000-2009-027-F.PDF>.

Currently, Caltrans is working to assess which transportation facilities are at greatest risk from climate change effects. However, without statewide planning scenarios for relative sea level rise and other climate change impacts, Caltrans has not been able to

determine what change, if any, may be made to its design standards for its transportation facilities. Once statewide planning scenarios become available, Caltrans will be able review its current design standards to determine what changes, if any, may be warranted to protect the transportation system from sea level rise.

No Notice of Preparation was filed for the project. However, the project is programmed for construction funding in the period 2008 through 2013. Therefore, no further analysis of climate change adaptation is required.

Avoidance, Minimization, and/or Mitigation Measures

CC-1 As part of the construction specifications for the roadway widening, the contractor shall be directed to use Portland cement for the curb, gutters, and sidewalks. In addition, all new or replacement traffic signals shall be energy efficient, such as light emitting diode (LED) traffic signals.

