

State Route 99/State Route 219 (Kiernan Avenue) Interchange Reconstruction Project

Stanislaus County, California

10-0L3300

Project ID 10 0000 0100

10-STA-99—PM R21.9/R23.1

10-STA-219—PM 0.0/0.3

Initial Study with Proposed Mitigated Negative Declaration/ Environmental Assessment



Prepared by the
State of California Department of Transportation

The environmental review, consultation, and any other action required in accordance with applicable federal laws for this project is being, or has been, carried out by the California Department of Transportation under its assumption of responsibility pursuant to 23 U.S. Code 327.

November 2010



General Information About This Document

What's in this document?

The California Department of Transportation (Caltrans), as assigned by the Federal Highway Administration, has prepared this Initial Study with Proposed Mitigated Negative Declaration/Environmental Assessment to examine the potential environmental impacts of alternatives being considered for the proposed project in Stanislaus County, California. The document describes why the project is being proposed, alternatives for the project, the existing environment that could be affected by the project, potential impacts from each of the alternatives, and the proposed avoidance, minimization, and/or mitigation measures.

What should you do?

- Please read this Initial Study with Proposed Mitigated Negative Declaration/Environmental Assessment. Additional copies of this document as well as the technical studies are available for review at the Caltrans district office at 1976 East Martin Luther King Boulevard, Stockton, California 95205 and the Nick W. Blom Salida Regional Library at 4835 Sisk Road, Salida, California 95368.
- Attend the public information meeting.
- We welcome your comments. If you have any concerns regarding the proposed project, please attend the public information meeting or send your written comments to Caltrans by the deadline. Submit comments via U.S. mail to Caltrans at the following address:

Gail Miller, Branch Chief
Central Sierra Environmental Analysis Branch
California Department of Transportation
2015 East Shields Avenue, Suite 100
Fresno, California 93726

Submit comments via email to: [gail_miller@ dot.ca.gov](mailto:gail_miller@dot.ca.gov).

- Submit comments by the deadline: December 29, 2010.

What happens next?

After comments are received from the public and reviewing agencies, Caltrans, as assigned by the Federal Highway Administration, may 1) give environmental approval to the proposed project, 2) do additional environmental studies, or 3) abandon the project. If the project is given environmental approval and funding is appropriated, Caltrans could design and build all or part of the project.

For individuals with sensory disabilities, this document is available in Braille, in large print, on audiocassette, or on computer disk. To obtain a copy in one of these alternate formats, please call or write to Caltrans, Attn: Gail Miller, District 6, 2015 E. Shields Ave., Suite 100, Fresno, CA 93726; or contact the Caltrans District 10 Public Affairs Office at (209) 948-7977 or use the California Relay Service TTY number, (800) 735-2929 or dial 711.

EA# 10-0L3300
Project ID#10 0000 0100
10-STA-99-PM R21.9/R23.1
10-STA- 219 – PM 0.0/0.3

Reconstruct the interchange at State Route 219 (Kiernan Avenue) along State Route 99
(PM R21.9/R23.1) and from 0.8 mile south of State Route 219 (Kiernan Avenue) to 0.4
mile north of State Route 219 (Kiernan Avenue) (PM 0.0/0.3)

INITIAL STUDY
with Proposed Mitigated Negative Declaration/ENVIRONMENTAL ASSESSMENT

Submitted Pursuant to: (State) Division 13, California Public Resources Code
(Federal) 42 U.S. Code 4332(2)(C) and 23 U.S. Code 327

THE STATE OF CALIFORNIA
Department of Transportation

November 22, 2010
Date of Approval


Sarah Gassner, Acting Office Chief
Central Region Environmental North
California Department of Transportation

Proposed Mitigated Negative Declaration

Pursuant to: Division 13, Public Resources Code

Project Description

The California Department of Transportation (Caltrans) proposes to rebuild the existing State Route 99/State Route 219 (Kiernan Avenue) interchange, including the overcrossing, on- and off-ramps, and certain roadway segments within the interchange limits.

Determination

This proposed Mitigated Negative Declaration is included to give notice to interested agencies and the public that it is Caltrans' intent to adopt a Mitigated Negative Declaration for this project. This does not mean that Caltrans' decision regarding the project is final. This Mitigated Negative Declaration is subject to change based on comments received by interested agencies and the public.

Caltrans has prepared an Initial Study for this project and, pending public review, expects to determine from this study that the proposed project would not have a significant effect on the environment for the following reasons:

The proposed project would have no effect on land use and planning, cultural resources, coastal zones, mineral resources, utility services, public services, emergency services, relocations, parks and recreational services, wild and scenic rivers, or agricultural resources.

In addition, the proposed project would have no significant effect on the following: aesthetics and visual resources, air quality, biological resources, geology and soils, hazards and hazardous materials, hydrology and water quality, population and housing, relocations, and transportation and traffic.

The proposed project would have no significantly adverse effect on sensitive noise receptors and paleontological resources because of the following mitigation measures:

- Noise abatement is proposed along the southern property line of the residential properties that border Kiernan Court and would wrap around to the north along the eastern property line of the residential properties that border Sisk Road.
- The effects to the Pleistocene formations consisting of the Riverbank and Modesto formations would be mitigated by implementation of a Paleontological Mitigation Plan that includes monitoring and a Paleontological Monitoring Report.

Sarah Gassner, Acting Office Chief
Central Region Environmental North
California Department of Transportation

Date

Summary

The California Department of Transportation (Caltrans) proposes to rebuild the existing State Route 99/State Route 219 (Kiernan Avenue) interchange in the community of Salida in Stanislaus County. The project would include rebuilding the overcrossing, on- and off-ramps, and certain roadway segments within the interchange limits. On- and off-ramps would be widened to accommodate greater traffic volumes entering and exiting the mainline. The four-lane overcrossing would be widened to accommodate future traffic making turns or passing through the interchange. The proposed improvements would add four additional travel lanes (eight lanes total) to State Route 219 (Kiernan Avenue) between Salida Boulevard and Sisk Road, including the elevated overcrossing. Work would also change the existing diamond interchange ramps to and from State Route 99.

Three alternatives have been considered: two build alternatives and a no-build alternative.

Build Alternatives

The proposed build alternatives would widen the State Route 99/State Route 219 (Kiernan Avenue) interchange to eight lanes by adding two lanes in each direction (eastbound and westbound) from Salida Boulevard to Sisk Road. Also, the existing diamond interchange would become a compact diamond (Alternative 1) or a hybrid diamond/loop (Alternative 2), altering the on- and off-ramps in both directions.

The existing Kiernan Avenue overcrossing of State Route 99 would be replaced and elevated to achieve standard vertical clearance over State Route 99. For both build alternatives, an auxiliary lane would be added to both the northbound and southbound lanes of State Route 99 from Kiernan Avenue to Pelandale Avenue. The State Route 99/State Route 219 (Kiernan Avenue) interchange would conform to the existing four-lane roadways at Salida Boulevard and Sisk Road.

Changes to turn-lane approaches would be made at Salida Boulevard and Sisk Road where they intersect Kiernan Avenue. In addition, pedestrian/bicycle facilities, drainage improvements/basins, and landscaping would be included in both build alternatives.

No-Build Alternative

The No-Build Alternative would retain the existing Kiernan Avenue interchange in its current configuration. The existing interchange can accommodate current traffic flow, but with increased growth in the area, the interchange vehicle capacity would begin to decline as traffic in the future increases.

If the No-Build Alternative were selected, a number of environmental conditions would decline when compared with the build alternatives. Traffic levels-of-service would degrade to unacceptable levels, resulting in severe congestion and gridlock. Along with congested conditions, air quality could potentially exceed the federal and state standards for various emissions.

Table S.1 Summary of Major Potential Impacts from all Alternatives

Potential Impact		Alternative 1	Alternative 2	No-Build Alternative
Relocation	Business displacements	3 industrial businesses and 1 office building	4 industrial businesses and 1 commercial business	None
	Housing displacements	2 single-family homes	3 single-family homes	None
	Utility service relocation	Impacts from relocations	Impacts from relocations	None
Traffic and Transportation/ Pedestrian and Bicycle Facilities		None	None	Levels-of-service will continue to degrade
Water Quality and Storm Water Runoff		Water-quality impacts from erosion	Water-quality impacts from erosion	None
Paleontology		Low potential for encountering paleontological resources	Low potential for encountering paleontological resources	None
Air Quality		Short-term construction-related impacts	Short-term construction-related impacts	Long-term air quality will degrade with continued congestion
Noise and Vibration		Increase in ambient noise levels	Increase in ambient noise levels	None
Construction		Short-term construction impacts	Short-term construction impacts	None

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Chapter 1 **Proposed Project**

1.1 Introduction

The California Department of Transportation (Caltrans), in cooperation with the Stanislaus County Department of Public Works, proposes to rebuild the State Route 99/State Route 219 (Kiernan Avenue) interchange between Salida Boulevard and Sisk Road in northern Stanislaus County (see Figure 1-1 and Figure 1-2).

The proposed improvements would rebuild the State Route 99/State Route 219 (Kiernan Avenue) interchange, add four additional travel lanes to State Route 219 (Kiernan Avenue) within the project limits, and change the existing interchange on- and off-ramps to and from State Route 99. An auxiliary lane would be added in both directions on State Route 99 between State Route 219 (Kiernan Avenue) and Pelandale Avenue. This project is included in the 2010 Federal Statewide Transportation Improvement Program and is included in the Stanislaus Council of Government's 2011 Regional Transportation Plan (approved July 2010). Funding is proposed from a variety of sources that include the Regional Surface Transportation Program and local public facility fees generated by ongoing development.

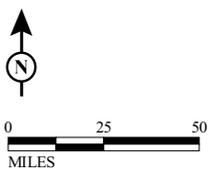
The proposed project involves an existing interchange on State Route 219 (Kiernan Avenue) at State Route 99 (mainline freeway). The State Route 99/State Route 219 (Kiernan Avenue) interchange within the project limits is currently a four-lane highway (two lanes in each direction) from Salida Boulevard to Sisk Road. State Route 99 is a six-lane freeway (three lanes in each direction) throughout the project limits. State Route 99 is part of the California freeway and expressway system stretching almost the entire length of the Central Valley.

1.2 Purpose and Need

1.2.1 Purpose

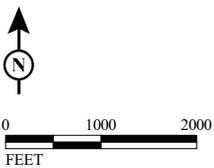
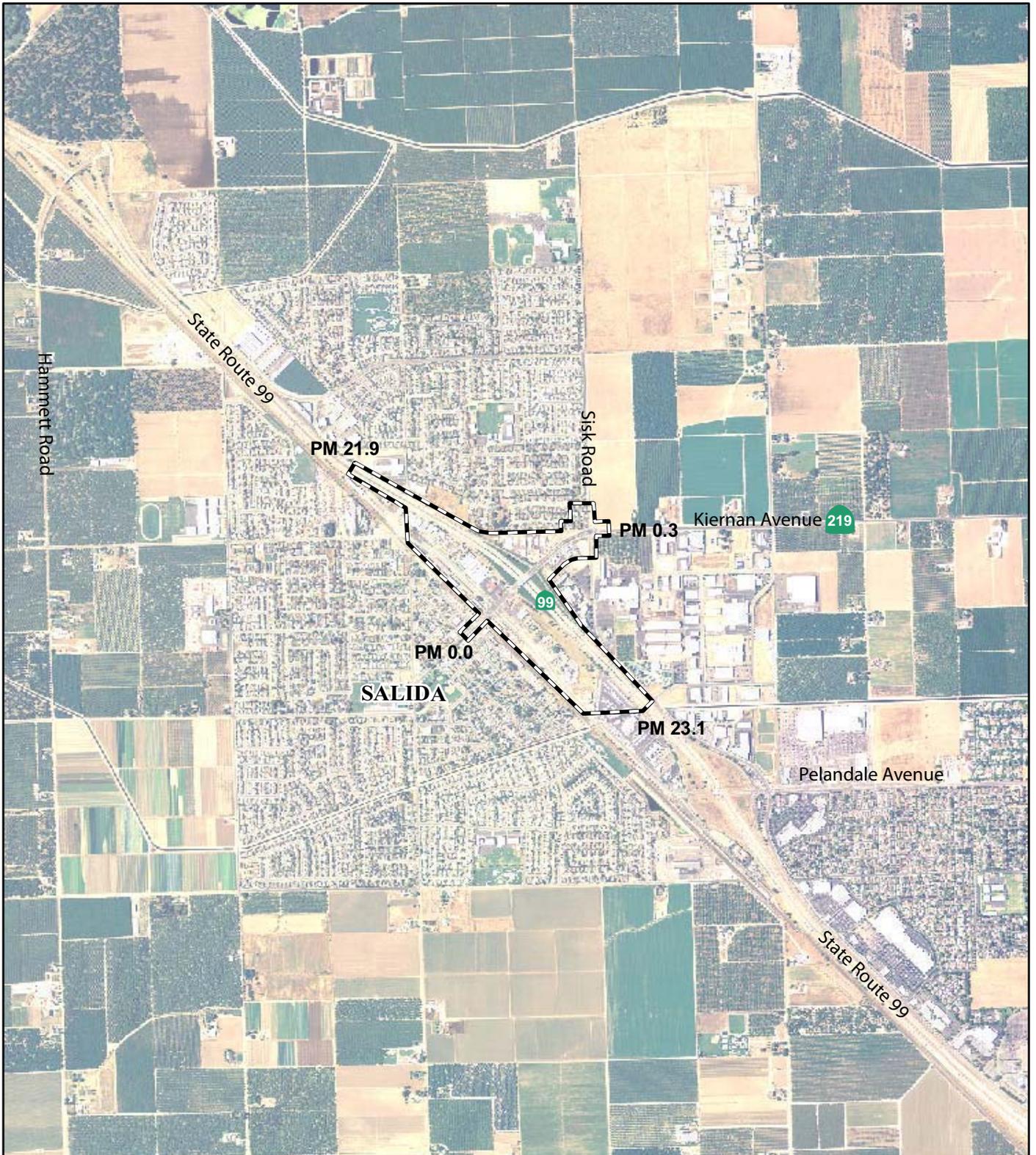
The following is the purpose of the project:

1. To reduce delay and to avoid traffic backup in the State Route 99/State Route 219 (Kiernan Avenue) interchange area.
2. To improve traffic operations, reduce traffic congestion at the State Route 99/State Route 219 (Kiernan Avenue) interchange.



SOURCE: U.S. Census Bureau Tiger 2K (2002)

Figure 1.1
Project Vicinity Map
EA # 10-0L330
10-STA-99-PM R21.9/R23.1
10-STA-219-PM 0.0/0.3



LEGEND
 Project Location

Figure 1.2
Project Location Map
EA # 10-0L330
10-STA-99-PM R21.9/R23.1
10-STA-219-PM 0.0/0.3

1.2.2 Need

The project is needed for the following reasons:

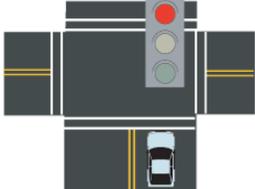
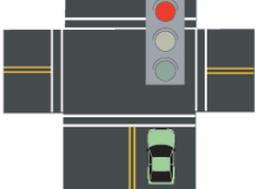
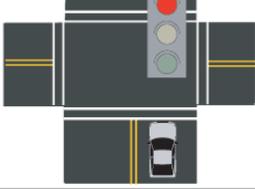
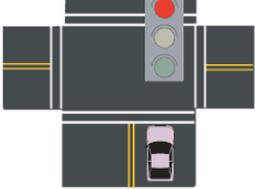
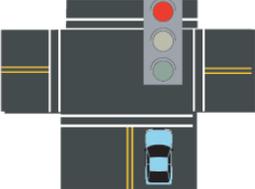
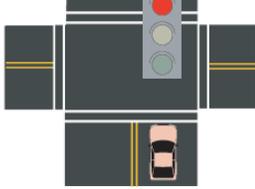
Existing and Projected Traffic Congestion and Level-of-Service

The traffic analysis prepared for the project identified that the State Route 219 (Kiernan Avenue) at Sisk Road intersection, northeast of the project interchange, currently operates at level-of-service E during the afternoon peak hour (see Figure 1-3 for an explanation of level-of-service). Additionally, the northbound State Route 99 off-ramp to State Route 219 (Kiernan Avenue) operates at level-of-service E. The project is needed to improve the existing level-of-service at these two intersections to acceptable levels.

The delays in the peak-travel directions under existing conditions stem from regional growth in the county on State Route 99. This regional growth is reflected in anticipated land-use patterns projected in the Stanislaus County General Plan and Stanislaus Council of Government's Regional Transportation Plan. Additionally, current land uses have led to periods of high traffic volumes and deterioration of peak-hour traffic operations, including vehicle backup that extends across multiple intersections. At this time, automobiles back up into nearby intersections at the State Route 99 (southbound ramps)/State Route 219 (Kiernan Avenue) intersection; State Route 99 (northbound ramps)/State Route 219 (Kiernan Avenue) intersection; and the State Route 219 (Kiernan Ave)/Sisk Road intersection.

Under existing conditions, the following intersections operate at or near level-of-service F or worse during peak traffic hours: Indian Ridge Lane/Kiernan Avenue, Kiernan Court/Kiernan Avenue, and Sisk Road/Kiernan Avenue. By 2015, the traffic analysis shows that, without improvement, all existing intersections within the study area are expected to operate at or near level-of-service F (see Figure 1-4). The project is needed to reduce delay and to avoid traffic backup into nearby intersections.

As a result of the current and projected growth mentioned above, total traffic volumes on the State Route 99/State Route 219 (Kiernan Avenue) interchange off-ramps are projected to increase by about 1,500 vehicles in both the morning and afternoon peak hours by 2035. Vehicles lining up on the ramps would back up onto State Route 99 in both directions. Traffic operations would continue to decline into 2035 if no changes

Level of Service	Delay per Vehicle (seconds)
	 ≤ 10
	 11-20
	 21-35
	 36-55
	 56-80
	 >80

Factors Affecting LOS of Signalized Intersections

Traffic Signal Conditions:

- Signal Coordination
- Cycle Length
- Protected left turn
- Timing
- Pre-timed or traffic activated signal
- Etc.

Geometric Conditions:

- Left- and right-turn lanes
- Number of lanes
- Etc.

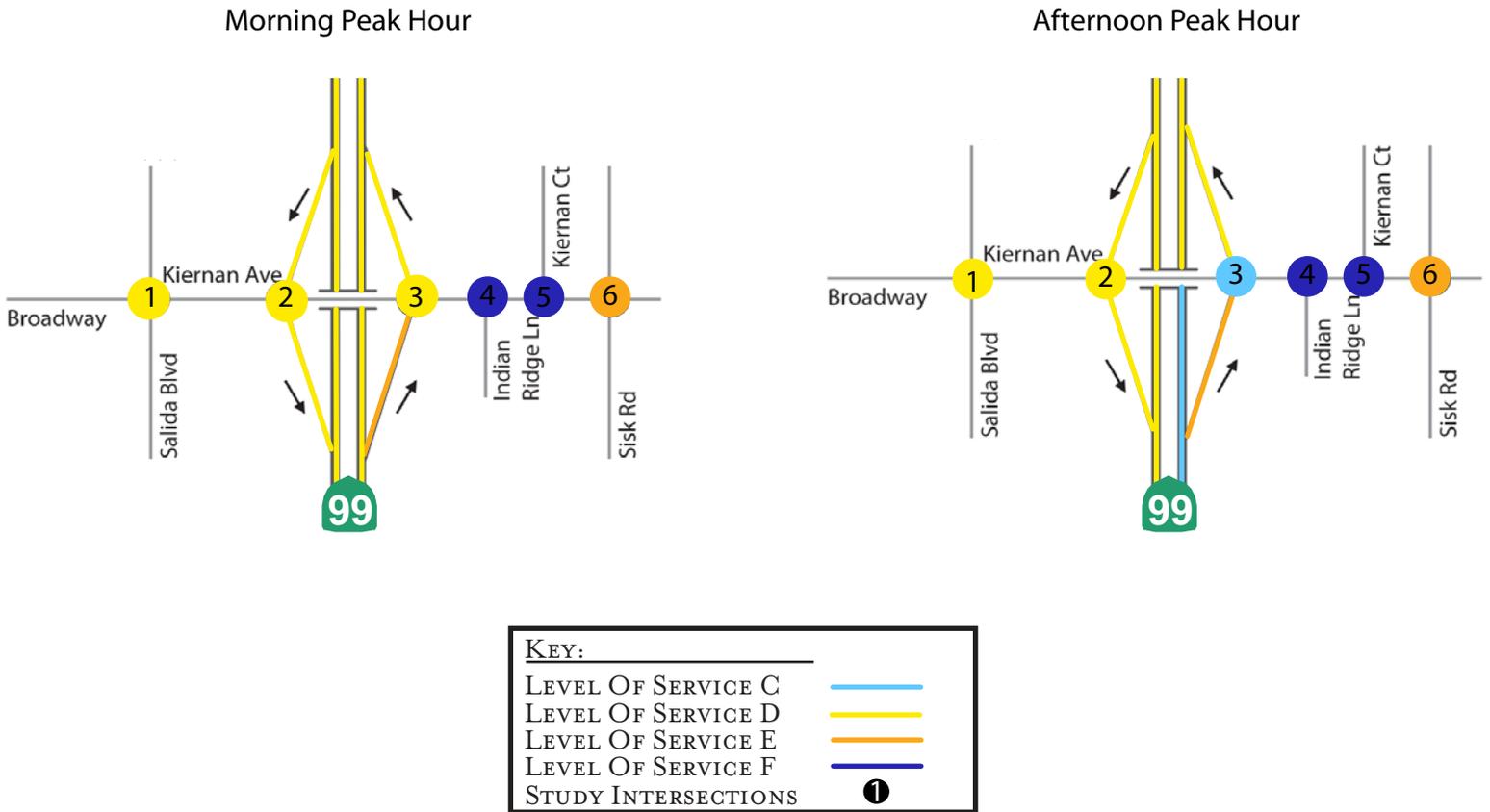
Traffic Conditions:

- Percent of truck traffic
- Number of pedestrians
- Etc.

SOURCE: California Department of Transportation

Figure 1.3
Levels of Service For Signalized Intersections

EA # 10-0L330
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10-STA-219-PM 0.0/0.3



SOURCE: SR 99/Kiernan Ave Interchange
Traffic Operations Report
(2009)

Figure 1.4
Levels of Service Existing Conditions
EA # 10-0L330
10-STA-99-PM R21.9/R23.1
10-STA-219-PM 0.0/0.3

occur to the intersections (see Figure 1-5). The project is needed to create additional traffic capacity that works with growth forecasts and traffic projections.

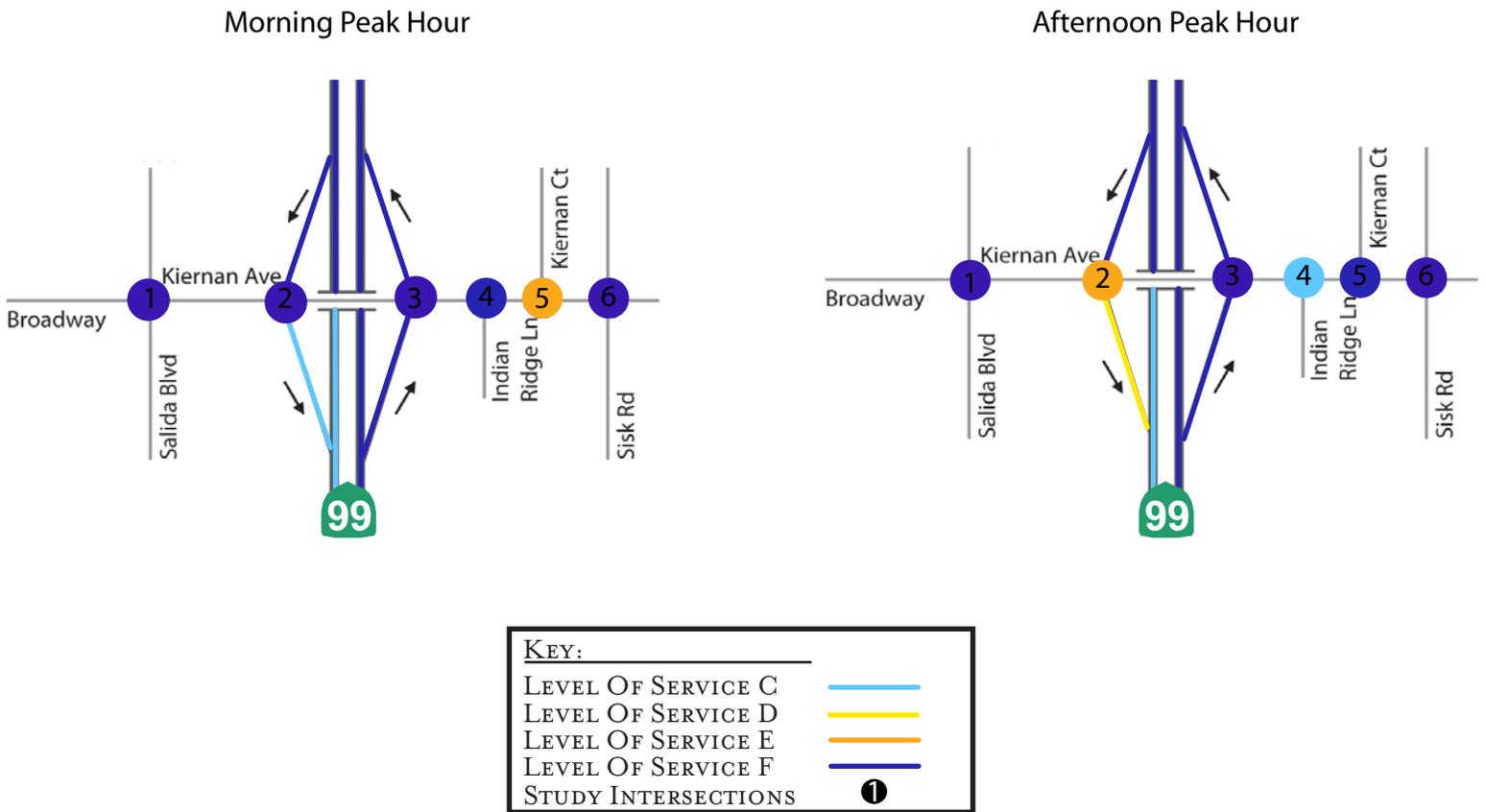
Improve Traffic Operations

As discussed in the previous section the project is needed to improve the existing level-of-service to acceptable levels and to reduce delay and avoid traffic backing up into nearby intersections.

Additionally, the level-of-service within the weaving (merging) section on State Route 99 between Pelandale Avenue and State Route 219 (Kiernan Avenue) is less than level-of-service D for both directions due to the existing lack of adequate spacing between these interchanges (see below, Existing Nonstandard Features within the Project Limits). The level-of-service within this weaving section contributes to adverse levels-of-service at the interchanges. The auxiliary lanes between the interchanges would improve traffic weaving (merging) onto State Route 99.

Current Deficiencies

Traffic congestion at the State Route 99/State Route 219 (Kiernan Avenue) interchange is a result of the short intersection spacing on State Route 219 (Kiernan Avenue). Another factor is that the roadway does not have enough room to hold the high number of cars turning onto and exiting from State Route 99 during peak traffic hours. The traffic congestion that currently occurs during peak hours would continue to rise with the area's expected growth increase.



SOURCE: SR 99/Kiernan Ave Interchange
Traffic Operations Report
(2009)

Figure 1.5
Levels of Service - No Build Alternative Year 2035
EA # 10-0L330
10-STA-99-PM R21.9/R23.1
10-STA-219-PM 0.0/0.3

Existing Nonstandard Features within the Project Limits

State Route 99—

- Nonstandard interchange spacing between Pelandale Avenue intersection and State Route 219 (Kiernan Avenue) intersection
- Nonstandard vertical clearance at the State Route 219 (Kiernan Avenue) bridge.

Local Intersections—

- Nonstandard number of curb ramps at ramp intersections
- Nonstandard intersection-to-ramp spacing at State Route 219 (Kiernan Avenue) and Salida Boulevard

1.3 Alternatives

This section describes the proposed action and the Build Alternatives that have been developed by Caltrans to address the project’s purpose and need, while avoiding or minimizing environmental impacts. Major features used for comparison included project cost, level-of-service and other traffic data, and specific environmental impacts.

A number of build alternatives were considered. Two build alternatives and a no-build alternative have gone forward for evaluation in this document. The Alternative 1 estimated cost is \$39.8 million while the Alternative 2 estimated cost is \$62.1 million. Section 1.3.1 describes the alternatives under consideration. Section 1.3.2 describes the no-build alternative. Section 1.3.3 provides a comparison of the build alternatives. Section 1.3.4 explains why other alternatives were dropped from further consideration.

1.3.1 Build Alternatives

Common Design Features of the Build Alternatives

Both alternatives would widen State Route 219 (Kiernan Avenue) from four lanes to eight lanes by adding two lanes in each direction (eastbound and westbound) from Salida Boulevard to Sisk Road.

Kiernan Interchange: The following improvements are common to the State Route 99/State Route 219 (Kiernan Avenue) interchange improvements:

Overcrossing Structure (Bridge) —The existing State Route 219 (Kiernan Avenue) structure that crosses over State Route 99 would be widened and lengthened to

accommodate the improvements at the interchange as a result of additional through and turn lanes. Improvements would include the addition of new columns in the State Route 99 median to support the widened State Route 219 (Kiernan Avenue) overcrossing structure.

Local Streets—Changes would be required for various local streets to fit interchange improvements. Specifically, Salida Boulevard north and south of State Route 219 (Kiernan Avenue) and Sisk Road north and south of State Route 219 (Kiernan Avenue) would be changed for additional through lanes and turn lanes. Indian Ridge Lane and Kiernan Court would also be temporarily affected during construction.

Auxiliary Lane—An auxiliary lane would be added in both directions on State Route 99 between State Route 219 (Kiernan Avenue) and Pelandale Avenue.

Pedestrian and Bicycle Facilities—Where required, all existing pedestrian and bicycle facilities would be integrated into the project features to maintain non-motorized service. Within the project limits, sidewalks on both sides of State Route 219 (Kiernan Avenue) would be provided for pedestrians to cross State Route 99 at the State Route 99/State Route 219 (Kiernan Avenue) interchange.

Drainage—Due to the increase in paved surfaces, drainage improvements are required to capture and treat increased stormwater runoff. Drainage improvements would include surface and subsurface drains, retention basins, and relocation of the existing State Route 99 pump station. Each new drainage-facility location would include improvements to remove roadway contaminants before the runoff is discharged into nearby streams. Runoff water ultimately drains into the Stanislaus River.

Landscaping—Landscaping would take place after the interchange improvements are completed: ice plant replaced; trees and shrubs added; irrigation system replaced. Temporary and permanent erosion control would be provided.

Unique Features of the Build Alternatives

Both Kiernan Avenue build alternatives would add two new lanes in each direction to the bridge overcrossing. The differences, however, between the build alternatives focus on the ramps and intersections.

For Alternative 1, the on- and off-ramps would be widened in both directions for additional turn lanes (see Figure 1-6). An auxiliary lane would be added in both

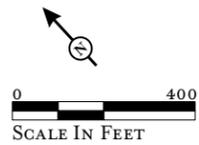
directions on State Route 99 between State Route 219 (Kiernan Avenue) and Pelandale Avenue. State Route 219 (Kiernan Avenue) would be widened to conform to the existing roadways at Salida Boulevard and at Sisk Road. These intersections and approaches on Salida Boulevard and Sisk Road would be modified to accommodate these improvements. The west leg of State Route 219 (Kiernan Avenue) at Salida Boulevard would be widened and painted with traffic stripes for the additional left turn lanes.

Intersection spacing remains similar to current conditions. Right-of-way impacts would affect three industrial businesses and one office building. The nonstandard intersection spacing would remain, which would require the processing of a mandatory design exception (the design exception is conceptually approved and currently under review). One sound barrier (soundwall) is included for this alternative and would be placed along the southern property lines of the residential properties that border Kiernan Court.

Right-of-way impacts would affect three industrial businesses and one office building. The non-standard distance between the intersections would remain, requiring a design exception that is currently under review.

For Alternative 2, the existing diamond interchange would be changed to a hybrid-design diamond/loop interchange (see Figure 1-7). The southbound loop on-ramp would cross over the southbound off-ramp (typically called a “braided ramp”). The braided ramp would eliminate the non-standard distance between intersections, improve traffic flow, and reduce the time vehicles wait to pass through the intersections.

State Route 219 (Kiernan Avenue) at Salida Boulevard and Sisk Road would be widened and conformed to the existing roadways. These intersections and approaches on Salida Boulevard and Sisk Road would be changed to fit these improvements. The west leg of Broadway Avenue at Salida Boulevard would be changed to accept additional left-turn lanes. Right-of-way impacts would affect four industrial businesses and one commercial business.



SOURCE: BASEMAP - DIGITALGLOBE AERIAL (8/2008)

- Proposed Roadway
- Proposed Right of Way
- Proposed Drainages & Basins

Figure 1.6
Alternative 1 Layout
EA # 10-0L330
10-STA-99-PM R21.9/R23.1
10-STA-219-PM 0.0/0.3



Figure 1.7

Alternative 2 Layout
EA # 10-0L330
10-STA-99-PM R21.9/R23.1
10-STA-219-PM 0.0/0.3

- Proposed Roadway
- Proposed Right of Way
- Proposed Drainages & Basins

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SCALE IN FEET

SOURCE: BASEMAP - DIGITALGLOBE AERIAL (8/2008)
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***Transportation System Management and Mass Transit Alternatives,
Transportation Demand Management Alternative***

The following Transportation System Management measures would be incorporated into the build alternatives:

Traffic Operations Systems Elements

The project improvements at the State Route 99/State Route 219 (Kiernan Avenue) interchange would include changeable message signs/roadway information systems for congestion monitoring, as well as integration of the ramp metering equipment.

Improved Pedestrian and Bikeway Facilities

Planned pedestrian facilities include widened walkways consisting of two 10-foot-wide sidewalks on the State Route 219 (Kiernan Avenue) overcrossing. No new bike lanes or paths are proposed; however, widened shoulders on the State Route 219 (Kiernan Avenue) overcrossing would improve bicycle usage.

1.3.2 No-Build Alternative

The No-Build Alternative for the State Route 99/State Route 219 (Kiernan Avenue) interchange would not change the existing bridge (overcrossing structure) or ramps. The No-Build Alternative includes all previous improvements to the interchange including minor striping and signal modifications currently under construction. The No-Build Alternative for the interchange does not meet the purpose and need as identified in Section 1.2. None of the interchange improvements would occur, and vehicular mobility would be constrained. As a result of congestion, local motorists would be delayed and confined to the project vicinity, with increasing difficulty accessing the region through State Route 99. Finally, unacceptable traffic levels-of-service and congestion with the No-Build Alternative would minimize the opportunities to provide a balanced transportation network for the region.

1.3.3 Comparison of Alternatives

Criteria considered by Caltrans to evaluate the alternatives included project purpose and need objectives, project costs, potential environmental effects, and input from public services, public agencies, property owners, and the general public.

Each of the build alternatives is viable and meets the project purpose and need; however, the build alternatives vary in how well they improve traffic operations throughout the entire project area.

Both Alternative 1 and Alternative 2 would provide increased traffic capacity on local roadways compared to the No-Build Alternative and would improve levels-of-service on the State Route 99 off-ramp to State Route 219 (Kiernan Avenue) and portions of State Route 99 between Hammett Road and State Route 219 (Kiernan Avenue). The build alternatives, however, would largely have little effect on the State Route 99 mainline and ramp operations due to downstream bottlenecks on the mainline which is level-of-service F. System wide vehicle delay provides information for comparing the two build alternatives from a traffic operations standpoint. The lower the vehicle-delay hours the more effectively the interchange and surrounding roadway systems operate.

- Alternative 1—Vehicle delay reduced to 929 hours during the morning peak period and 1,738 hours during the afternoon peak period.
- Alternative 2—Vehicle delay reduced to 145 hours during the morning peak period and 125 hours during the afternoon peak period.
- No-Build Alternative—Vehicle delay is 1,189 hours during the morning peak period and 2,376 during the afternoon peak period.

Except for slight differences in relocation impacts, all environmental impacts are the same for the build alternatives. Alternative 1 would not provide the standard distance between intersections and would require a mandatory design exception. Neither alternative would have impacts that cannot be mitigated through avoidance, minimization, and/or mitigation measures. See Table 1.1 for a comparison of the alternatives and their environmental impacts.

Table 1.1 Summary of Major Potential Impacts from all Alternatives

Impact		Alternative 1	Alternative 2	No-Build Alternative
Relocation	Business displacements	3 industrial businesses and 1 office building	4 industrial businesses and 1 commercial business	None
	Housing displacements	2 single-family homes	3 single-family homes	None
	Utility-service relocation	Impacts from relocations	Impacts from relocations	None
Traffic and Transportation/ Pedestrian and Bicycle Facilities		None	None	Levels of Service will continue to degrade
Water Quality and Storm Water Runoff		Water quality impacts from erosion	Water quality impacts from erosion	None
Paleontology		Low potential for encountering paleontological resources	Low potential for encountering paleontological resources	None
Air Quality		Short-term construction- related impacts	Short-term construction- related impacts	Long-term air quality will degrade with continued congestion
Noise and Vibration		Increase in ambient noise levels	Increase in ambient noise levels	None
Construction		Short-term construction impacts	Short-term construction impacts	None

1.3.4 Alternatives Considered but Eliminated from Further Discussion

The project development team studied a number of viable alternatives for the State Route 99/State Route 219 (Kiernan Avenue) interchange during the project-initiation phase. Due to poor operational performance, considerable right-of-way impacts, and cost, Alternatives 3 through 7 were dropped from further analysis.

Alternative 3—Modified Compact Diamond with Southbound Loop On-ramp

The southbound exit-ramp intersection would cause severe congestion on Salida Boulevard. As a result, due to the numerous southbound vehicles turning left onto Broadway Avenue, the future level-of-service at the Broadway Avenue and Salida Boulevard intersection would be level-of-service F during morning peak-hour traffic. Alternative 3, therefore, would not meet the purpose and need of the project.

Alternative 4—Modified Compact Diamond with Southbound Loop Off-Ramp

The major problem for this alternative is the westbound traffic entering the southbound on-ramp from State Route 219 (Kiernan Avenue). Westbound vehicles not turning onto the southbound on-ramp need to travel through the Broadway Avenue and Salida Boulevard intersection, creating long delays at the Broadway Avenue and Salida Boulevard intersection and the Salida Boulevard and southbound on-ramp intersections. Because this alternative presented no advantages over other build alternatives and added right-of-way costs, Alternative 4 was determined not feasible.

Alternative 5—Hybrid Loop-Ramp Interchange

This alternative would have free-flow characteristics for all traffic movements but a higher cost than a diamond interchange, plus capacity limits due to a relatively short 100-foot-weaving (or merging) section between the two loop ramps. The volume of weaving traffic would be greater than 2,000 vehicles per hour and would result in level-of-service F operations in the 2035 afternoon peak hours, affecting both the mainline freeway and loop-ramp operations. Additionally, this alternative would require 9.7 acres of right-of-way, which is three times greater than the proposed alternatives. Because this alternative presented no advantages over the build alternatives and added right-of-way costs, Alternative 5 was determined not feasible.

Alternative 6—Modified Compact Diamond with Southbound Buttonhook Ramps North of Broadway Avenue

This alternative would divert all southbound traffic from State Route 219 (Kiernan Avenue) to Salida Boulevard. As a result, it would deteriorate the level-of-service of the intersections at the southbound ramp and at Salida Boulevard, due to numerous left turns. Because of these deteriorated traffic levels-of-service, it was determined that Alternative 6 would not meet the purpose and need of the project.

Alternative 7—Modified Compact Diamond with Southbound Buttonhook Ramps South of Broadway

This alternative would build southbound buttonhook ramps south of Broadway Avenue. As a result, this alternative would reduce the weaving distance between the State Route 99/State Route 219 (Kiernan Avenue) interchange and State Route

99/Pelandale Avenue interchange to 526 feet. Because the alternative presented no advantages over the build alternatives and would introduce a mandatory design exception for the reduced weaving distances between the State Route 99/State Route 219 (Kiernan Avenue) interchange and the State Route 99/Pelandale Avenue interchange, Alternative 7 was determined not feasible.

1.4 Permits and Approvals Needed

Table 1.2 shows the permits, reviews, and approvals required for project construction.

Table 1.2 Permits and Approvals

Agency	Permit/Approval	Status
Stanislaus County	Encroachment Permit allows building within the county right-of-way. Contractor obtains permit prior to construction.	Stanislaus County
Central Valley Regional Water Quality Control Board	Water Discharge Permit and Section 401 Water Quality Certification. Review and approval of stormwater discharge treatments. Contractor obtains permit prior to construction.	Central Valley Regional Water Quality Control Board
Caltrans	Encroachment Permit allows building within the state right-of-way. Contractor obtains permit prior to construction.	Caltrans

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, potential impacts from each of the alternatives, and proposed avoidance, minimization, and/or mitigation measures. Any indirect impacts are included in the general impacts analysis and discussions that follow. Related regulatory information—the laws, regulations, and governmental and regulatory agencies involved for each impact area—is provided at the beginning of each section as needed.

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

- Coastal Zone—The project area is not in a coastal zone. (Field visit on April 21, 2009)
- Cultural Resources—The project is not anticipated to have archaeological or historical built-environment resources. (Archaeological Study Report/Historic Resources Evaluation Report, June 2010)
- Geology/Soils/Seismic/Topography—The project is not located in a seismic-hazard zone, and liquefaction potential is considered low. (Geotechnical Report, October 2009)
- Hydrology and Floodplain—The project is not in a floodplain and is not anticipated to have any impacts to hydrologic resources. (Floodplain Evaluation Report, September 2010)
- Natural Communities—The project is located in an area that is a highly altered environment, and natural communities have been displaced. (Natural Environment Study, July 2010)
- Parks and Recreational Services—No parks or recreational services are present within the project area. (Field visit on April 21, 2009)

- Plant Species—Due to the absence of suitable habitat, no special-status plant species are expected to occur within the biological study area. (Natural Environment Study, July 2010)
- Threatened and Endangered Species—No threatened or endangered species are expected to occur within the biological study area. (Natural Environment Study, July 2010)
- Wetlands and Other Waters—No potential jurisdictional waters are present in the biological study area. (Natural Environment Study, July 2010)
- Wild and Scenic Rivers—No wild or scenic rivers are within or adjacent to the project area. (Field visit on April 21, 2009)

2.1 Human Environment

This section explains the impacts that the project would have on the human environment in the project area. The section describes the existing environment that could be affected by the project and the potential impacts from each alternative.

2.1.1 Land Use

This section describes existing and proposed land uses on the project site and vicinity.

2.1.1.1 Existing and Future Land Use

Stanislaus County adopted an updated General Plan in 2006 that provides a land use blueprint for long-term growth to at least 2035. The Stanislaus County General Plan provides a plan for the northern Salida area that allows substantial amounts of new residential, commercial, and office development. The Salida Community Plan, adopted August 7, 2007, is a blueprint for land use in the Salida area. Specifically, the Salida Community Plan, which is consistent with the planning uses in the Stanislaus County General Plan, foresees substantial residential and commercial growth in the northern and northeastern portions of the Salida community (see Figure 2-1).

As the community grows from development projects consistent with the recent Stanislaus County General Plan update, the demand for transportation improvement will increase. Traffic generated by future projects and growth will need to use State Route 219 (Kiernan Avenue) and State Route 99 to access travel destinations in the region.

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



SALIDA COMMUNITY PLAN

SALIDA, CA

Figure 2.1
Salida Community Plan Plan
 EA # 10-0L330
 10-STA-99-PM R21.9/R23.1
 10-STA-219-PM 0.0/0.3

SOURCE: County of Stanislaus General Plan

The Stanislaus Council of Governments is the regional transportation-planning agency for the county and conducts regional transportation planning for the area. The county, the Stanislaus Council of Governments, and Caltrans are working cooperatively on long-range programs to address the transportation needs of the community and region.

The projected land uses in the study-area consist of residential, commercial, industrial, and planned development and uses. Future land use in the Salida community follows a regional trend that surrounds the project area with more residential and commercial development. Table 2.1 shows other proposed transportation projects in the project area.

Table 2.1 Proposed Transportation Projects

Name	Jurisdiction	Proposed Uses	Status
State Route 99/State Route 219 (Kiernan Avenue) Widening	Caltrans	Widen from 2 to 4 lanes	90% Built In construction
Pelandale Avenue/State Route 99 Interchange Widening/Reconstruction	City of Modesto	Widen from 4 to 6 lanes; replace ramps	0% Built Proposed
State Route 99/Hammett Road Interchange Widening/Reconstruction	Stanislaus County	Widen from 4 to 6 lanes; replace ramps	0% Built Proposed
State Route 219 (Kiernan Avenue) from State Route 99 to Stoddard Road	Caltrans	Widen from 4 to 6 lanes	0% Built Proposed
Sisk Road from State Route 219 (Kiernan Avenue) to Pirrone Road	Stanislaus County	Widen from 2 to 4 lanes	0% Built Proposed
Sisk Road from Pelandale Avenue to State Route 219 (Kiernan Avenue)	Stanislaus County	Widen from 2 to 4 lanes	0% Built Proposed
Stoddard Road from State Route 219(Kiernan Avenue) to Ladd Road	Stanislaus County	Widen from 2 to 4 lanes	0% Built Proposed

One other project that is in the environmental phase is the North County Corridor Project that would build about 25 miles of roadway on a new alignment to provide interregional connectivity from State Route 99 to 6 miles east of the State Route 120 and State Route 108 junction. The corridor project would likely be a four- to eight-lane controlled-access highway. Using concepts from the North County Corridor, State Route 99 to State Route 120 Project, one of the alternatives under consideration,

would connect to State Route 219 (Kiernan Avenue) or another interchange within the vicinity of the Salida Community, as a local road or a state route. If the North County Corridor Project connects as a state route, another design exception would be required for the nonstandard distance between the State Route 99/Hammett Road interchange and the State Route 99/State Route 219 (Kiernan Avenue) interchange.

Environmental Consequences

Land would have to be acquired for each build alternative to accommodate interchange improvements. Alternative 1 would acquire 5.5 acres of right-of-way, and Alternative 2 would acquire 11.7 acres of right-of-way. Existing land uses for these right-of-way allocations include agricultural, commercial, industrial, and residential uses. Farmland areas to be acquired during right-of-way acquisition are currently zoned for agricultural purposes, but the Stanislaus County General Plan and Salida Community Plan have designated these areas as a business park. Right-of-way relocation/compensation practices would be followed and planned characteristics of the roadway corridor would not be altered. No substantial impacts to land use would result from construction of the proposed project because the project is consistent with local planning for the area and would not cause land use inconsistencies. The project also would improve roadway conditions that support the current and future land use activities within the project area.

Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are required.

2.1.1.2 Consistency with State, Regional, and Local Plans

Affected Environment

State Route 219 (Kiernan Avenue) crosses State Route 99 to create a grade-separated interchange along State Route 99 in the community of Salida. State Route 99 is a highway that runs north to south through the Central Valley. The proposed project would widen State Route 219 (Kiernan Avenue) and would consist of improvements to the interchange to facilitate this widening. The Stanislaus County General Plan provides local land use and long-term guidance for planning in the study area. The Stanislaus Council of Governments Regional Transportation Plan addresses the near- and long-term transportation needs for the project area and prioritizes funding requirements. Lastly, because the interchange connects with a state highway, the project would need to meet Caltrans and Federal Highway Administration guidelines.

Regional

Stanislaus Council of Governments Regional Transportation Plan—The Regional Transportation Plan is the coordinated long-range transportation plan for the region's nine cities and the unincorporated county. The Stanislaus Council of Government's long-range transportation plans for the region are stated within the Regional Transportation Plan. The Regional Transportation Plan includes an assessment of overall growth and economic trends in the region and provides a strategic direction for transportation capital investments.

Local

Stanislaus County General Plan—The Stanislaus County General Plan outlines the seven mandatory planning elements (land use, circulation, housing, open space, conservation, safety, and noise) outlined in Section 65300 of the California Government Code. This information provides the long-term land-use planning structure for the county.

Salida Community Plan—The Salida Community Plan, part of the Stanislaus County General Plan, is a long-term planning document that focuses on land-use planning for the Salida community.

Environmental Consequences

The proposed project is consistent with all major regional and local plans and programs.

The circulation element of the Stanislaus County General Plan includes the State Route 99/State Route 219 (Kiernan Avenue) interchange as a special study area (County of Stanislaus General Plan, 2-19). The purpose of the proposed interchange reconstruction is to support the long-term circulation-element objectives.

The general plan provides land-use planning and guidance for development of about 4,600 acres of land in the Salida area. The Salida Community Plan provides further guidance for land uses within the Salida community.

To support this planned land use, new roadways within the area must be designed to fit a variety of vehicle types, traffic volumes, speeds, and safety conditions.

Improvements are specified in the Salida Community Plan for the State Route 99/State Route 219 (Kiernan Avenue) interchange (County of Stanislaus General Plan, 1-76 - 1-86). The proposed project is consistent with these plans.

The project is consistent with the 2011 Regional Transportation Plan and has been programmed for 2014 to 2015 construction funding.

Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures required.

2.1.2 Growth

Regulatory Setting

The Council on Environmental Quality regulations, which implement the National Environmental Policy Act of 1969, requires 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 on Environmental Quality regulations, 40 Code Federal Regulations 1508.8, refers to these consequences as indirect impacts. Indirect impacts may include changes in land use, economic vitality, and population density, which are all elements of growth.

The California Environmental Quality Act 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 proposed project could foster economic or population growth, or the construction of additional housing, either directly or indirectly, in the surrounding environment...."

Affected Environment

From 2000 to 2008, Stanislaus County experienced a population growth of 17 percent. During this period, 43 percent of the population growth was attributable to the birth rate while 7 percent was attributable to immigration.

The Central Valley has long been known for relatively affordable housing compared with much of the rest of California (California Association of Realtors 2007). For example, the median home price for Santa Clara County is 2.4 times higher than housing in Stanislaus County.

Since 2006, a significant downturn in residential construction throughout Stanislaus County has resulted in a significant number of layoffs, reduced purchase of materials and supplies, and effects to related services and suppliers of household goods.

One of the clearest indicators of the construction slowdown is building-permit activity. After cresting at 4,489 permits in 2005, the number of permits descended to 1,148 through 2007. Additionally, with a foreclosure rate at 9 percent in 2008, residential foreclosures have reached higher levels than at any time in recent history.

Despite the current economic climate, certain sectors remain strong, including agriculture, the core industry in the county. Also, with a growing skilled labor force (college degrees have increased by 13 percent since 2000), and with lower housing prices resulting in improved affordability, Stanislaus County is poised for significant growth in the future.

Environmental Consequences

Table 2.2 lists the screening factors developed to help determine the likely growth potential of the project and whether further analysis was necessary.

Table 2.2 Screening Factors

Screening Factor	Discussion
Accessibility	The proposed project would provide new connections to already existing roadways only and would not increase or provide new access to other parts of the project area such as non-roadway uses/lands, extend utility infrastructure, or increase utility capacity. New roadways would be introduced to the project area but would serve solely as access points to existing roadways. In the proposed project, effects related to accessibility would be minimal.
Project type, location, and growth pressure	The project area is an urban area surrounded by rural land uses. Transportation projects in urban areas surrounded by rural land uses have a higher potential to cause growth-related impacts as population density and economic activity generate higher demands for conversion of undisturbed lands to developed uses. The proposed project is being built to meet existing demand and projected future growth based on the Stanislaus County General Plan, Salida Community Plan, and Stanislaus Council of Governments 2011 Regional Transportation Plan. Both the Stanislaus County General Plan and the Stanislaus Council of Governments 2011 Regional Transportation Plan have not forecasted any potential growth as a result of the proposed project. The proposed project is responding to growth forecasts developed for these plans to ensure that circulation along State Route 99 and the roadways and segments adjacent to the proposed project would keep pace with population increases.
Foreseeable growth	The proposed project would not directly affect growth within the Salida community or Stanislaus County. The proposed project would generally improve regional transportation along the State Route 99 corridor and the roadways and segments adjacent to the interchange in a manner consistent with the Stanislaus County General Plan, Salida Community Plan, and Stanislaus Council of Governments 2011 Regional Transportation Plan.
Growth and its impact on resources	Because the growth would not occur without implementation of the planned growth projected in the Stanislaus County General Plan, the Salida Community Plan, and Stanislaus Council of Governments 2011 Regional Transportation Plan, the proposed project would not induce or encourage growth. As such, no growth-inducing impacts are anticipated.

Based on the results of the screening factors above, the proposed project would not induce growth, and therefore no further analysis is required.

Avoidance, Minimization, and/or Mitigation Measures

The proposed project and its relative cumulative projects would not stimulate unplanned residential or related commercial growth. It is not foreseeable that project-related growth would put pressure on or cause impacts to the environmental resources of concern. No avoidance, minimization, and/or mitigation measures are proposed because growth impacts would be minimal.

2.1.3 Farmlands/Timberlands

Regulatory Setting

The National Environmental Policy Act and the Farmland Protection Policy Act (7 United States Code 4201-4209 and regulations 7 Code of Federal Regulations Part 658) require federal agencies, such as the Federal Highway Administration, and Caltrans as assigned, to coordinate with the Natural Resources Conservation Service if activities irreversibly convert farmland (directly or indirectly) to nonagricultural use. For purposes of the Farmland Protection Policy Act, farmland includes prime farmland, unique farmland, and land of statewide or local importance.

The California Environmental Quality Act requires the review of projects that would convert Williamson Act contract land to nonagricultural uses. The main purposes of the Williamson Act are to preserve agricultural land and to encourage open space preservation and efficient urban growth. The Williamson Act provides incentives to landowners through reduced property taxes to deter the early conversion of agricultural and open space lands to other uses.

Affected Environment

A Farmland Conversion Assessment was prepared in June 2010. From this assessment, the California Department of Conservation designates and maps “important farmlands” in California. The categories that are used for “important farmlands” are described below:

- Prime farmland—Land with the best combination of physical and chemical features used for the production of agricultural crops.
- Farmland of statewide importance—Land with a good combination of physical and chemical features used for the production of agricultural crops
- Unique farmland—Land of lesser-quality soils used for the production of the state’s leading agricultural crops.
- Grazing land—Land on which the existing vegetation is suited for livestock grazing.
- Urban and built-up land—Land occupied by structures with a building density of at least 1 unit to 1.5 acres, or approximately 6 structures to a 10-acre parcel.
- Other land—Land that does not meet the criteria of any other category.

The existing land uses in the vicinity of the proposed project reflect both urban development and rural agriculture. According to the significant-farmlands map, the land for the project area is designated prime farmland. No timberland is near the proposed project.

Environmental Consequences

Project implementation (i.e., new interchange signals and rebuilding) would result in the conversion of about 4.5 acres (Alternative 1) or 4.4 acres (Alternative 2) of prime farmland (see Table 2.3). The actual impact to prime farmland would be the soils within the proposed new right-of-way. The farmland areas that would be affected are at the northeast and southeast corners of the State Route 219 (Kiernan Avenue)/Sisk Road intersection. The project would directly convert 4.5 acres under Alternative 1 or 4.4 acres under Alternative 2. The project would not encourage the development of the remainder of the affected parcel. That development is already planned for in the Stanislaus County General Plan and the Salida Community Plan. It is anticipated that development may occur by 2025.

Table 2.3 Farmland Conversion by Alternative

Alternatives	Total Land Converted (acres)	Prime, Statewide, and Unique Farmland (acres)	Percent of Farmland in Stanislaus County	Percent of Farmland in the State	Farmland Conversion Impact Rating
Alternative 1	4.5	4.5	0.00*	0.00*	41
Alternative 2	4.4	4.4	0.00*	0.00*	41

* less than 0.001 %

Source: June 2010 Farmland Conversion Assessment

The loss of “important farmlands” was evaluated based on the United States Department of Agriculture, Natural Resources Conservation Service Farmland Conversion Impact Rating System. Implementation of the proposed project design would affect soils designated for various crop productions, defined by the United States Department of Agriculture, Natural Resources Conservation Service as having prime agricultural significance.

A Farmland Conversion Impact Rating Form AD-1006 was used to identify potential impacts to farmland for this project. The form requires an evaluation of issues such as the feasibility of farming the land, the relationship of the land to urban development, and the current and future use of farmland in the project area. A project scoring 160 points or more out of a possible 260 must consider alternatives that avoid or minimize

farmland impacts. Scores less than 160 should “be given a minimal level of consideration for protection and no additional sites be evaluated,” as stated in the Farmland Protection Policy Act of 1981, and is not considered to have an impact on farmland.

If an agency completing the form determines a rating below 60 points for any “site” or alternative for Part VI (see Appendix E, Form AD-1006), the form is not submitted to the Natural Resources Conservation Service for further scoring because the total score would not add up to the 160 points maximum score for Parts IV, V, and VI. For this project, Alternative 1 scored a 41 and Alternative 2 scored 41. Both scores are below 60 and, therefore, have not been submitted to the Natural Resources Conservation Service for further processing.

In light of the minor loss of agricultural lands (conversion of agricultural lands to urban uses), and a rating below 160 points out of a maximum 260 points from the Justification for Site Assessment, it is concluded that the proposed project would not substantially affect agricultural soils or productivity (see Appendix E for Farmland Conversion Impact Rating).

Avoidance, Minimization, and/or Mitigation Measures

No mitigation is required.

2.1.4 Community Impacts

2.1.4.1 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 for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings (42 U.S.C. 4331[b][2]). The Federal Highway Administration in its implementation of the National Environmental Policy Act (23 United States Code 109[h]) directs that final decisions regarding projects 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 changes 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

The project site is in the community of Salida in Stanislaus County. State Route 99 passes through the project area and is part of the California freeway and expressway system stretching almost the entire length of the Central Valley. The project area consists primarily of residential and commercial uses adjacent to State Route 99. Table 2.4 includes information regarding Stanislaus County and was obtained from the U.S. Census Bureau 2000.

Table 2.4 Community Characteristics

	Community of Salida	Stanislaus County
Total Population	12,560	446,997
Median Household Income	57,874	40,101
Median Home Value	144,500	125,300

Source: United States Census Bureau 2000

Population Characteristics

Ethnicity—The ethnic breakdown of the community of Salida and Stanislaus County displayed in Table 2.5 is from data obtained from the U.S. Census Bureau 2000.

Table 2.5 Ethnicity Breakdown

Study Area	White		Black or African American		American Indian/Alaskan Native		Asian		Native Hawaiian/Other Pacific Islander		Hispanic		Other	
	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%	Total	%
Community of Salida	8,628	69	424	3	161	1	595	5	31	<1	1,964	16	757	6
Stanislaus County	309,901	69	11,521	3	5,676	1	18,848	4	1,529	<1	75,187	17	24,335	5

Source: United States Census Bureau 2000

According to Table 2.5, the community of Salida has a white population of 69 percent, the same percentage as the county. The Black or African American population for the community of Salida is 3 percent, the same percentage as the

county. There is 5 percent Asian population residing in the community of Salida compared to 4 percent for the county. The Hispanic population is comparable in the community of Salida at 16 percent compared to 17 percent for the county. The 69 percent white and 31 percent minority in community of Salida is also comparable to the county.

Age—The number of residents over 55 years old in Stanislaus County was 79,820 (12 percent) and 1,324 (7 percent) in the community of Salida. The number of residents under 18 years old in Stanislaus County was 139,222 (21 percent) and 4,522 (24 percent) in the community of Salida.

Education—The population of residents in Stanislaus County 25 years old and older was 264,578. Of these, 29.6 percent do not have a high school diploma or similar educational degree. About 26.0 percent have a high school education, 23.6 percent have attended some college, 6.6 percent have an associate’s degree, 9.6 percent have a bachelor’s (college) degree, and 4.4 percent have a graduate or professional degree.

Population and Housing—In 2000, population density in Stanislaus County was 295 persons per square mile. The state population density in 2000 was 220 persons per square mile. In 2008, the Stanislaus County population was 526,047, a gain of about 16 percent from 2000 when the population was 451,029 (California Department of Finance 2009). The county is expected to grow an average of 2.03 percent per year to about 950,000 residents by 2035 (2010 Stanislaus Council of Governments Regional Transportation Plan).

The population of the Salida community is 12,560 and comprises approximately 2.8 percent of Stanislaus County’s population of 446,997 people (United States Census 2000). The total number of households in the community of Salida is 3,617, with an average household size of 3.44 people per residence. The total number of households within Stanislaus County is 145,146, with an average household size of 3.03 people per residence. (United States Census 2000). The United States Census Bureau defines a household as a group of people, related or otherwise, living together in a dwelling unit.

The community of Salida is in an area with a high concentration of single-family households compared to the county. Historically, single-family homes have a lower household size than multi-family residential units (apartments or condominium complexes).

Neighborhoods/Communities

The proposed project is located between two neighborhood districts. The neighborhood boundaries are based on being east or west of State Route 99, the primary physical feature dividing the community. Both of these neighborhoods are surrounded by agricultural land uses in all directions. Dwellings consist primarily of single-family households of approximately the same median age. Some commercial and light-industrial uses are found primarily along major roadways.

Historically, indicators of strong community cohesion are long average-residency tenures; households of two or more people; large percentages of home ownership; large percentages of single-family homes; large percentages of elderly, and abundant community activities.

The community of Salida is a relatively young community with most of the housing growth having occurred within the last 15 years. The largest group of households consists of single-family homeowners below the age of 55. Overall, despite the residents' relatively young age, factors such as single-family homeownership, household size, and community facilities, the Salida neighborhoods are viewed as cohesive units with strong community orientation.

Housing

The community of Salida has a total of 3,740 housing units while the county has 150,807. In Salida, 123 units are unoccupied, and 5,661 units are unoccupied in the county. The owner-occupied housing units total 3,146 (86 percent) and renter-occupied units total 471 (13 percent). In the county, 89,886 (62 percent) housing units are owner-occupied and 55,260 (38 percent) are renter-occupied (United States Census, 2000). The majority of Salida homeowners have lived in their homes for less than 15 years (67 percent) compared with 36 percent in Stanislaus County. The ratio is consistent with development patterns in the community of Salida, which has experienced much of its population growth within the past 15 years.

Environmental Consequences

Population Characteristics

The project is intended to accommodate the long-range population planning for the region. The Stanislaus County General Plan, Salida Community Plan, and Stanislaus Council of Governments Regional Transportation Plan include the proposed project as an element needed to accommodate regional population forecasts.

Neighborhoods/Communities

No impacts to neighborhoods/communities are anticipated.

Housing

Land to be acquired to accommodate the proposed project would require full property acquisitions of two single-family homes under Alternative 1 and three single-family homes under Alternative 2. Except for one unit built in the 1960s, the residences were built in the late 1980s.

Despite the acquisitions and relocations, the proposed project is not expected to negatively affect the existing neighborhoods or communities in the project area. Because State Route 99 and State Route 219 (Kiernan Avenue) currently exist, area neighborhoods are well established and would remain unchanged with the project. The current neighborhood units would retain their current cohesiveness and would not be divided or split by project features. Additionally, the project would not separate residences from community facilities, increase urbanization, or decrease public access. Therefore, impacts to the community's cohesion or character are not anticipated.

Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are required. A few business and residential units surrounding the existing Kiernan Avenue interchange would be affected by the project. (The relocation section of this report discusses any potential impacts to these residential units and businesses.)

2.1.4.2 Relocations

Regulatory Setting

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. Please 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 United

States Code 2000d, et seq.). See Appendix B for a copy of Caltrans' Title VI Policy Statement.

Affected Environment

A Relocation Impact Memorandum and Relocation Impact Statement were completed for this project in September 2010. The State Route 99/State Route 219 (Kiernan Avenue) interchange area consists primarily of commercial and industrial uses with some single-family residences in the area. Commercial uses include retail, fast-food restaurants, and storage. Industrial uses include warehousing and manufacturing. Single-family residences consist of three- and four-bedroom homes primarily built in or after 1987.

Environmental Consequences

For Alternative 1, a total of two single-family homes would be acquired for the proposed rebuilding of the State Route 99/State Route 219 (Kiernan Avenue) interchange. The homes are on the edge of a residential neighborhood. For Alternative 2, a total of three single-family homes would be acquired for the proposed project. Two of the homes are on the edge of a residential neighborhood of similar homes and one is in a semi-industrial area. The residences are all one-story single-family homes 30 to 60 years old. The residences appear to be rentals, based on differing street and owner mailing addresses included in the parcel information.

For Alternative 1, as many as three industrial businesses and one office building would be moved for the proposed project. Under Alternative 2, up to four industrial businesses and one commercial business would be moved. Also under Alternative 2, up to 256 personal-property moves from a mini-storage would be required. None of the businesses appear to rely on foot traffic or drive-by customers to be successful. It is anticipated that a new location in the general area would not affect the amount of money these businesses make.

Various information sources, including NationalRelocation.com, Realfacts.com, the U.S. Census Bureau, and the Modesto Bee indicate a 4 percent vacancy rate for the community. A review of local listings and advertising sources, including the Multiple Listing Service, revealed that there are an adequate number of single-family residences for rent or purchase in the community that are equal to or better than the properties from which the families moved. Also, based on a review of available office, commercial, and industrial properties in the Salida and surrounding north Stanislaus County area, a sufficient supply appears to exist of suitable replacement sites for sale or lease.

The number of available properties within the market area exceeds the amount needed to relocate the affected properties. Therefore, there are adequate resources currently available within or near the project area to facilitate relocations. The special needs of each displacement are not known at this time but would be determined prior to negotiations for acquisition.

All persons who are moving because of the proposed project would be contacted by a Relocation Agent to ensure that eligible displaced residents receive their full relocation benefits, including advisory assistance, and that all activities would be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. Relocation resources would be available to all displaced residents free of discrimination. Tenant occupants of properties to be acquired are contacted soon after the first written offer to purchase and also are given a detailed explanation of Caltrans' Relocation Program Property Acquisition Policies Act of 1970, as amended. Caltrans would provide relocation advisory assistance to any person, business, farm, or non-profit organization displaced as a result of acquisition of real property for public use.

Avoidance, Minimization, and/or Mitigation Measures

The following measures would be required to address property displacements and relocations associated with the proposed project.

- A relocation agent would contact all displaced people. The agent would ensure that eligible displaced residents receive their full relocation benefits such as advisory assistance, and that all activities will be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. Relocation resources shall be available, free of discrimination, to all displaced residents.
- The Uniform Relocation Assistance and Real Property Acquisitions Policies Act (Uniform Act) of 1970 (Public Law 91-646, 84 Stat. 1894) mandates that payments be made available to eligible residents, businesses, and nonprofit organizations displaced or affected by projects. The Uniform Act provides for equitable land acquisition policies.
- Where acquisition is unavoidable, the provisions of the Uniform Act and the 1987 Amendments as implemented by the Uniform Relocation Assistance and Real Property Acquisition Regulations for federal and federally assisted programs adopted by the Department of Transportation, March 2, 1989, would be followed.

An independent appraisal of the affected property would be obtained, and an offer for the full appraisal would be made.

2.1.4.3 Environmental Justice

Regulatory Setting

All projects involving a federal action (funding, permit, or land exchange) 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 Executive 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 2009, this was \$22,050 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, found in Appendix B of this document.

Affected Environment

The following analysis provides a comparison of measures that evaluate environmental justice:

- Ethnicity
- Percentage of population below poverty level
- Median household income

The proposed project would result in residential, and non-residential industrial and commercial business displacements, which consist of up to 3 single-family homes, 4 industrial businesses, and 1 commercial business; therefore, property relocations are required. Race and ethnicity are presented in Table 2.5. Poverty-level characteristics of the community around the proposed project are listed in Table 2.6.

**Table 2.6 Minority and Poverty Status of the Kiernan Avenue Area
(Salida Community) and Stanislaus County**

Study Area	Minority Population Percentage	Poverty Percentage	Median Household Income per Year
Salida Community	31%	7%	\$67,874
Stanislaus County	31%	16%	\$40,101

Source: United States Census 2000

Ethnic composition for the Salida community is 69 percent white and 31 percent minority populations. Stanislaus County and the Salida community have identical ethnic populations.

The percentage of people living below the federal poverty level in the State Route 99/State Route 219 (Kiernan Avenue) interchange area is 7 percent, while Stanislaus County is 16 percent.

A field review of the proposed project area, including the residences that would be relocated, found that most of the residences in the area are in fair to good condition.

Local newspapers were identified to determine if minority populations are present in the study area. Local newspapers such as the *Mundo Hispano*, *Vida En El Val*, *Portuguese American Chronicle*, and others have a strong presence in the Salida area.

The racial and economic makeup around the proposed project vicinity is mostly non-minority populations. Most residents live above the federal poverty level. Compared to the county, the number of minorities in the project area is about the same, but fewer residents live below the federal poverty level.

No minority or low-income populations that would be adversely affected by the proposed project have been identified, as determined above. Therefore, this project is not subject to the provisions of Executive Order 12898.

Environmental Consequences

No environmental consequences were identified.

Avoidance, Minimization, and/or Mitigation Measures

No mitigation is required.

2.1.5 Utilities/Emergency Services

Affected Environment

The City of Modesto supplies water to the Salida community area. Numerous private wells also serve the community.

About 26 percent of the water supplied to the system originates from wells, with the remainder being treated surface water supplied by the City of Modesto. The City of Modesto Water Operations Division supplies drinking water to residents in Modesto, Empire, Salida, Waterford, Hickman, Grayson, Del Rio, parts of Ceres and Turlock, and county areas adjacent to the city system. For many years, Modesto's water customers received all of their water from wells. To continue delivering clean, dependable drinking water to customers, the city partnered with the Modesto Irrigation District in the early 1990s and in 1995 acquired the Del Este Water Company. Together, the city and irrigation district consolidated resources to build a 30-acre plant at Modesto Reservoir to treat surface water from the Tuolumne River.

Wastewater collection and treatment are provided by the Salida Sanitary District. The Regional Wastewater Control Facility is in Salida on Pirrone Road. The district treats wastewater using an intermittent-cycle extended-aeration system. Organisms that naturally live in the wastewater are allowed to increase in number through extended aeration in specially designed holding tanks. These organisms decompose the complex organic substances in the wastewater.

American Telephone and Telegraph Company provides telephone service in the community of Salida. Communications that include a mix of fiber optics, copper cable, and their supporting facilities are routed underground in public utility easements following the street alignments.

Electric and natural gas services are interwoven into the proposed project area and are provided by the Pacific Gas and Electric Company. Electric and gas facilities are routed above and below ground as needed in public utility easements. Of particular note is the natural gas distribution pipeline that extends through the project area.

The Salida Fire Protection District provides fire protection, paramedic emergency medical service, rescue, and response to hazardous materials incidents to the community of Salida. Both career and volunteer personnel are currently quartered in two modern stations. Station 1 is at East Broadway and Salida Boulevard in Salida, and Station 2 is at Tully and Ladd roads in the Del Rio area. Station 1 is within the project study area and would be affected by both build alternatives.

The Stanislaus County Sheriff's Department and California Highway Patrol provide police protection services. The Sheriff's Department patrols the county in six geographical sectors. There is a sub-station in each of these sectors, and a patrol lieutenant is assigned to each of these command sectors. The central command sector has two sub-stations, one in the community of Empire and another in the city of Hughson, which contracts with the Sheriff's Department for law enforcement services. The California Highway Patrol Central Division provides law enforcement services for California State Highways for the project area. The nearest California Highway Patrol area office is in the city of Modesto.

Environmental Consequences

Utility relocations would be required as a result of the proposed project. The American Telephone and Telegraph Company has underground facilities that would be affected by the project. The Pacific Gas and Electric Company has a gas-distribution pipeline that would be affected by the project. The Modesto Irrigation District has aboveground distribution facilities that would be affected by the project. The city of Modesto has a 12-inch water main that would be affected by the project. The Pacific Gas and Electric gas pipe, city of Modesto water pipe, and the American Telephone and Telegraph Company line are contained in a conduit structure that crosses State Route 99 within the existing Broadway Bridge.

Utility relocations are minor, occurring at the same time highway improvements are built and would create minimal customer disruption within the area surrounding the proposed project.

Emergency services would not be disrupted as a result of the proposed project. Temporary lane closures, expected during the build phase, would result in delays but are not expected to disrupt emergency services. Once the project is complete, congestion would lessen, and traffic level-of-service would improve, benefiting emergency services response times.

Avoidance, Minimization, and/or Mitigation Measures

A number of utilities for water, wastewater, storm drainage, electric and natural gas services, and other services are in the project area. Construction of the proposed project may require the relocation of utilities that would be affected by the project. These relocations should not present any unusual situations and are considered routine for roadway construction projects. The following minimization measures would reduce impacts to utilities and emergency services:

- The project would be designed to minimize conflicts with utilities in the project area.
- The project would relocate those utilities made difficult to reach for maintenance or access purposes as a result of the project.
- The contractor would be required to notify utility users of any short-term, limited interruptions of service.
- If unexpected underground utilities were encountered, the contractor would work with the utility provider to develop plans to address the utility conflict, protect the utility if needed, and limit service interruptions.
- The contractor would circulate construction schedules and traffic control information to county emergency-service providers at least one to two weeks before any road closures.
- The Traffic Management Plan would address redirecting emergency services during temporary lane closures.

2.1.6 Traffic and Transportation/Pedestrian and Bicycle Facilities

Regulatory Setting

Caltrans, as assigned by 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). Caltrans 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 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

Stanislaus County has seen rapid growth in the past several years. For the State Route 99/State Route 219 (Kiernan Avenue) interchange, this has meant an increase in the number of vehicles. The increase in traffic volumes has caused congestion in the interchange and surrounding intersections during peak-hour traffic. These conditions would become worse with continued regional growth and planned local development

if roadways stay in current conditions. A Traffic Operations Report was prepared for this project in June 2010. This section is based on the findings of that report.

Accident History

Caltrans provided accident data for State Route 99 through the study corridor and the interchange as shown in Table 2.7 below. The data shows that a total of 154 accidents were reported on the State Route 99 mainline from April 1, 2006 to March 31, 2009. The accident rates are expressed in the number of accidents per million-vehicle-miles for the mainline and million-vehicles for intersections and ramps. The total accident rates within the project area on the State Route 99 northbound and southbound off-ramps and the State Route 219 (Kiernan Avenue)/Sisk Road intersection are higher than the statewide average for similar facilities. Building auxiliary lanes on the mainline between the State Route 99/Pelandale Avenue interchange and the State Route 99/State Route 219 (Kiernan Avenue) interchange would improve vehicle movements for exiting and entering traffic.

The Kiernan Avenue/Sisk Road intersection would be widened to provide more room for future traffic demand, reducing congestion and providing better traffic flow at the intersection. Table 2.7 shows a majority of accidents are non-fatal and/or non-fatal + injury. With the improved traffic flow and operation, the project should reduce the incidents of accidents due to reduced congestion and improved levels of service.

Table 2.7 Accident History

Facility	Number of Accidents			Accident Rate (accidents per million-vehicle-miles)					
	Total	Fatal	Fatal + Injury	Actual			State Average		
				Fatality	Fatal + Injury	Total	Fatality	Fatal + Injury	Total
State Route 99 (post mile R21.96 to R23.119)	154	0	45	0.000	0.31	1.07	0.009	0.28	0.88
Northbound Off-Ramp to Broadway/State Route 219	10	0	2	0.000	0.35	1.73	0.002	0.31	1.00
Southbound On-Ramp from Broadway/State Route 219	2	0	0	0.000	0.000	0.35	0.001	0.19	0.60
Northbound On-Ramp from Broadway/State Route 219	2	0	0	0.000	0.000	0.29	0.001	0.19	0.60
Southbound Off-Ramp to Broadway/State Route 219	7	0	1	0.000	0.16	1.13	0.002	0.31	1.00
State Route 219/Sisk Road	34	0	10	0.000	0.33	1.13	0.002	0.19	0.55

Note: Shading denotes locations that exceed the statewide average.
Source: Caltrans District 10 Traffic Accident and Surveillance Analysis System data between April 1, 2006 and March 31, 2009 for State Route 99 mainline and ramps and State Route 219.

Intersection Operations

Under the No-Build Alternative in 2015, several intersections are anticipated to operate at unacceptable levels-of-services (level-of-service E or worse) during the morning and/or afternoon peak hour (see Table 2.8). These conditions are worse at several intersections under the No-Build Alternative in 2035 (see Table 2.9).

State Route 99 Mainline and Ramp Operations

Each mainline segment, ramp junction, and weaving (merging) section on State Route 99 was analyzed based on the design year (2035) volumes and lane configurations shown in the Traffic Operations Analysis Report (Tables 2.11 and 2.12). In all scenarios, State Route 99 crossing the Stanislaus River into San Joaquin County would be three lanes in each direction. South of the Stanislaus River bridge, State Route 99, with the exception of auxiliary lanes at two locations, would be four lanes.

An auxiliary lane would be built in the northbound direction between Pelandale Avenue and State Route 219 (Kiernan Avenue) as part of the State Route 99/Pelandale Avenue interchange project. This auxiliary lane was assumed to be in place under all alternatives, including the No-Build Alternative, and would be accommodated by widening State Route 99 to the outside. The auxiliary lane would start from the single-lane northbound on-ramp at Pelandale Avenue and end at the State Route 219 (Kiernan Avenue) northbound off-ramp via a two-lane exit. The auxiliary lane would feed into the mandatory exit lane of the two-lane exit.

Under Alternative 1 of the proposed project, an auxiliary lane would be built on the same segment in the southbound direction to handle the shortened distance for merging. The southbound auxiliary lane would fit the design by widening State Route 99 to the outside. The auxiliary lane would start from the single-lane southbound on-ramp at State Route 219 (Kiernan Avenue) and end at the Pelandale Avenue southbound off-ramp via a mandatory single-lane exit. Under Alternative 2, the State Route 219 (Kiernan Avenue) southbound on-ramp would shift north, increasing the weaving distance to the Pelandale Avenue off-ramp, eliminating the need for an auxiliary lane.

Public Transportation and Pedestrian and Bikeway Facilities

Passenger bus service is provided within the project area at the State Route 99/Kiernan Avenue interchange by Stanislaus Regional Transit and Modesto Area Express.

Stanislaus Regional Transit, run by Stanislaus County, operates inter-city and inter-county fixed-route bus services and serves the cities of Modesto, Riverbank, Oakdale, Turlock, Patterson, Grayson, Westley, Newman, Gustine, and Merced. Within the project area, they operate the Waterford/Modesto Runabout service.

The runabout service combines both fixed stop and curb-to-curb service, allowing passengers to schedule a pick up location or board the bus at a designated stop without calling ahead. Kiernan Avenue forms the northern border for the runabout service area.

Modesto Area Express, run by the City of Modesto, operates local and inter-city bus services 358 days a year and serves the cities of Modesto, Ceres, Salida, and Empire. The route alternates between the Kiernan Avenue loop and the Salida-Pelandale loop.

Designated bus stops are located on the south side of Kiernan Avenue between Indian Ridge Lane and Kiernan Court and on Sisk Road south of the Kiernan Avenue/Sisk Road intersection.

There are no bicycle facilities on State Route 219 (Kiernan Avenue).

The pedestrian network in the study area consists primarily of limited sidewalks and crosswalks. Between the State Route 219 (Kiernan Avenue)/Sisk Road intersection and State Route 219 (Kiernan Avenue)/Salida Boulevard intersection, a sidewalk is provided on the south side of State Route 219 (Kiernan Avenue). A sidewalk on the north side of State Route 219 (Kiernan Avenue) crosses over State Route 99 from just east of the State Route 99 northbound ramps to the State Route 99 southbound ramps. Crosswalks and curb ramps are provided at both ramp terminal intersections.

Recent improvements to the State Route 219 (Kiernan Avenue)/Salida Boulevard intersection installed crosswalks and curb ramps on all legs of the intersection. Crosswalks are also provided on all four legs of the State Route 219 (Kiernan Avenue)/Sisk Road intersection. Ramps and sidewalks, however, are only provided on the west side of the intersection along Salida Boulevard.

Environmental Consequences

The following discussion compares the potential effects of constructing the build alternatives with the No-Build Alternative. Since both build alternatives (modified compact diamond and hybrid (Type L-1 and Type L-6)) have similar results, they are

presented in the discussion below as “the build alternatives,” except where specifically referenced.

Impacts to Intersection Operations

At the 2035 build out, as shown in Table 2.9, each of the build alternatives would reduce system wide number of hours of delay compared to the No-Build Alternative. Fewer hours of delay mean improved traffic operations and reduced travel time through the interchange. Under both build alternatives, all intersections with signals would improve to acceptable levels (level-of-service D or better) except for the Indian Ridge Lane/State Route 219 (Kiernan Avenue) and Kiernan Court/State Route 219 (Kiernan Avenue) intersections, which would continue to operate unacceptably under both the No-Build and build alternatives. Delays show notable improvement in the 2015 analysis with the build alternatives, but deteriorate somewhat by 2035 as a result of projected traffic increases (see Table 2.8).

Table 2.8 Intersection Analyses for 2015

Intersection	Traffic Control	Peak Hour	No-Build Alt.	Alt. 1	Alt. 2
			LOS	LOS	LOS
Salida Boulevard/State Route 219 (Kiernan Avenue)	Signal	Morning	D	B	C
		Afternoon	F	C	C
State Route 99 Southbound Ramps/State Route 219 (Kiernan Avenue)	Signal ¹	Morning	F	C	2a = A 2b = B
		Afternoon	F	C	2a = A 2b = A
State Route 99 northbound ramps/State Route 219 (Kiernan Avenue)	Signal ¹	Morning	F	B	B
		Afternoon	C	B	B
Indian Ridge Lane/Kiernan Avenue	SSSC ²	Morning	A (E)	A (F)	A (E)
		Afternoon	A (D)	A (C)	A (C)
Kiernan Court/State Route 219 (Kiernan Avenue)	SSSC ²	Morning	A (C)	A (A)	A (A)
		Afternoon	C (F)	A (B)	A (C)
Sisk Road/State Route 219 (Kiernan Avenue)	Signal ¹	Morning	D	C	C
		Afternoon	F	D	D
System wide Vehicle Hours of Delay ⁴		Morning	299	74	82
		Afternoon	599	105	107
<p>Notes: Results based on SimTraffic simulation of 10 runs.</p> <ol style="list-style-type: none"> 1. Signalized intersection level-of-service based on weighted-average control delay per vehicle, according to the <i>2000 Highway Capacity Manual</i>. 2. Side-street stop intersection level-of-service based on weighted-average control delay per vehicle and worst approach control delay per vehicle, according to the <i>2000 Highway Capacity Manual</i> in the notation: average (worst approach). 3. Under Alternative 2, the southbound ramps are split into two intersections. The off-ramp intersection (2a) is presented first followed by the on-ramp intersection (2b). 4. The vehicle delay was computed by adding up each intersection's vehicle delay which is computed by multiplying the demand volume by the intersection delay (measured in vehicle-hours). <p>Source: Fehr & Peers, 2010.</p>					

Table 2.9 Intersection Analyses for 2035

Intersection	Traffic Control	Peak Hour	No-Build Alt.	Alt. 1	Alt. 2
			LOS	LOS	LOS
Salida Boulevard/State Route 219 (Kiernan Avenue)	Signal	Morning	F	C	C
		Afternoon	F	C	C
State Route 99 Southbound Ramps/State Route 219 (Kiernan Avenue)	Signal ¹	Morning	F	C	2a = B 2b = B ³
		Afternoon	E	B	2a = A 2b = A ³
State Route 99 northbound ramps/State Route 219 (Kiernan Avenue)	Signal ¹	Morning	F	C	C
		Afternoon	F	B	C
Indian Ridge Lane/State Route 219 (Kiernan Avenue)	SSSC ²	Morning	B (F)	E (F)	E (F)
		Afternoon	A (C)	A (D)	A (F)
Kiernan Court/State Route 219 (Kiernan Avenue)	SSSC ²	Morning	A (F)	A (A)	A (A)
		Afternoon	F (F)	A (C)	A (E)
Sisk Road/State Route 219 (Kiernan Avenue)	Signal ¹	Morning	E	C	C
		Afternoon	F	C	C
System wide Vehicle Hours of Delay ⁴		Morning	1,189	929	145
		Afternoon	2,376	1,738	125
<p>Notes: Results based on SimTraffic simulation of 10 runs.</p> <ol style="list-style-type: none"> 1. Signalized intersection level-of-service based on weighted-average control delay per vehicle, according to the 2000 <i>Highway Capacity Manual</i>. 2. Side-street stop intersection level-of-service based on weighted-average control delay per vehicle and worst approach control delay per vehicle, according to the 2000 <i>Highway Capacity Manual</i> in the notation: average (worst approach). 3. Under Alternative 2, the southbound ramps are split into two intersections. The off-ramp intersection (2a) is presented first followed by the on-ramp intersection (2b). 4. The vehicle delay was computed by adding up each intersection's vehicle delay which is computed by multiplying the demand volume by the intersection delay (measured in vehicle-hours). <p>Source: State Route 219/State Route 99 Interchange Reconstruction Project Traffic Operations Report, 2010.</p>					

Impacts to State Route 99 Mainline and Ramp Operations

Each mainline segment, ramp junction, and weaving (merging) section on State Route 99 was analyzed based on 2015 and 2035 volumes and lane configurations. Tables 2.10, 2.11, 2.12, and 2.13 show that the proposed project would have no effect on the mainline operations due to the queuing (vehicle back up) caused by insufficient mainline capacity. Some ramp operations would be improved in the southbound direction in both the morning and afternoon peak hours.

Table 2.10 Morning Peak-Hour Traffic on State Route 99 Mainline and Ramp Intersection for 2015

Location	Number of Lanes	Section Type	No-Build Alt.	Alt. 1	Alt. 2
			LOS ^{1,2}	LOS ^{1,2}	LOS ^{1,2}
Between Pelandale Avenue and State Route 219 (Kiernan Avenue) (northbound)	3 + Aux	Weave	E	E	E
Off-ramp to State Route 219 (Kiernan Avenue) ² (northbound)	1/2	Weave	E	E	E
On-ramp from State Route 219 (Kiernan Avenue) (northbound)	1	Merge	E	E	E
Between Kiernan Avenue and Hammett Road (northbound)	4	Mainline	D	D	D
Between Hammett Road and State Route 219 (Kiernan Avenue) (southbound)	2	Mainline	F³	D	D
Off-ramp to State Route 219 (Kiernan Avenue) (southbound)	1	Diverge	F³	D	D
On-ramp from State Route 219 (Kiernan Avenue) ⁴ (southbound)	1	Merge	E	C	C
Between State Route 219 (Kiernan Avenue) and Pelandale Avenue ⁴ (southbound)	3/ 3 + Aux	Mainline /Weave	D	C	C
<p>Note: Shaded cells represent mainline segments that are backed up due to downstream bottlenecks not captured by the HCM analysis, resulting in level-of-service F operations. Bold denotes level-of-service E or F operations.</p> <ol style="list-style-type: none"> 1. Level-of-service. 2. Density is in passenger cars per mile per lane. 3. This section is anticipated to be backed up as a result of vehicles backed up from the southbound off-ramp intersection. 4. This section is a basic segment under no-build conditions and a weaving section under build conditions. <p>Source: State Route 219/State Route 99 Interchange Reconstruction Project Traffic Operations Report, 2010.</p>					

Table 2.11 Morning Peak-Hour Traffic on State Route 99 Mainline and Ramp Intersection for 2035

Location	Number of Lanes	Section Type	No-Build Alt.	Alt. 1	Alt. 2
			LOS ^{1, 2}	LOS ^{1, 2}	LOS ^{1, 2}
Between Pelandale Avenue and Kiernan Avenue (northbound)	4 + Aux	Weave	F	F	F
Off-ramp to Kiernan Avenue ² (northbound)	1/2	Weave	F	F	F
On-Ramp from Kiernan Avenue (northbound)	1	Merge	F	F	F
Between Kiernan Avenue and Hammett Road (northbound)	4	Mainline	F	F	F
Between Hammett Road and Kiernan Avenue (southbound)	4	Mainline	F³	C	C
Off-ramp to Kiernan Avenue (southbound)	1	Diverge	F³	C	C
On-ramp from Kiernan Avenue ⁴ (southbound)	1	Merge	C	B	C
Between Kiernan Avenue and Pelandale Avenue ⁴ (southbound)	4/ 4 + Aux	Mainline /Weave	C	B	C

Note: **Shaded cells** represent mainline segments that are backed up due to downstream bottlenecks not captured by the HCM analysis, resulting in level-of-service F operations. **Bold** denotes level-of-service E or F operations.

- Level-of-service.
- Density is in passenger cars per mile per lane.
- This section is anticipated to be congested as a result of vehicles backed up from the southbound off-ramp intersection.
- This section is a basic segment under no-build conditions and a weaving section under build conditions.

Source: State Route 219/State Route 99 Interchange Reconstruction Project Traffic Operations Report, 2010.

Table 2.12 Afternoon Peak-Hour Traffic on State Route 99 Mainline and Ramp Intersection for 2015

Location	Number of Lanes	Section Type	No-Build Alt.	Alt. 1	Alt. 2
			LOS ^{1,2}	LOS ^{1,2}	LOS ^{1,2}
Between Pelandale Avenue and Kiernan Avenue (northbound)	3 + Aux	Weave	E	E	E
Off-ramp to Kiernan Avenue ² (Northbound)	1/2	Weave	E	E	E
On-ramp from Kiernan Avenue (northbound)	1	Merge	D	D	D
Between Kiernan Avenue and Hammett Road (northbound)	3	Mainline	F	F	F
Between Hammett Road and Kiernan Avenue (southbound)	3	Mainline	F³	D	D
Off-ramp to Kiernan Avenue (southbound)	1	Diverge	F³	D	D
On-ramp from Kiernan Avenue ⁴ (southbound)	1	Merge/ Weave	E	C	C
Between Kiernan and Pelandale Avenue ³ (southbound)	3/ 3 + Aux	Mainline/ Weave	D	C	C
<p>Note: Shaded cells represent mainline segments that are in backed up due to downstream bottlenecks not captured by the HCM analysis, resulting in level-of-service F operations. Bold denotes level-of-service E or F operations.</p> <ol style="list-style-type: none"> 1. Level-of-service. 2. Density is in passenger cars per mile per lane. 3. This section is anticipated to be congested as a result of vehicles backed up from the southbound off-ramp intersection. 4. This section is a basic segment under no-build conditions and a weaving section under build conditions. <p>Source: Fehr & Peers, 2010.</p>					

Table 2.13 Afternoon Peak-Hour Traffic on State Route 99 Mainline and Ramp Intersection for 2035

Location	Number of Lanes	Section Type	No-Build Alt.	Alt. 1	Alt. 2
			LOS ^{1,2}	LOS ^{1,2}	LOS ^{1,2}
Between Pelandale Avenue and Kiernan Avenue (northbound)	4 + Aux	Weave	F	F	F
Off-ramp to Kiernan Avenue ² (Northbound)	1/2	Weave	F	F	F
On-ramp from Kiernan Avenue (northbound)	1	Merge	F	F	F
Between Kiernan Avenue and Hammett Road (northbound)	4	Mainline	F	F	F
Between Hammett Road and Kiernan Avenue (southbound)	4	Mainline	F ³	C	C
Off-ramp to Kiernan Avenue (southbound)	1	Diverge	F ³	C	C
On-ramp from Kiernan Avenue ⁴ (southbound)	1	Merge/ Weave	D	D	D
Between Kiernan and Pelandale Avenue ³ (southbound)	4/ 4 + Aux	Mainline/ Weave	C	D	C
<p>Note: Shaded cells represent mainline segments that are in backed up due to downstream bottlenecks not captured by the HCM analysis, resulting in level-of-service F operations. Bold denotes level-of-service E or F operations.</p> <ol style="list-style-type: none"> 1. Level-of-service. 2. Density is in passenger cars per mile per lane. 3. This section is anticipated to be backed up as a result of vehicles backed up from the southbound off-ramp intersection. 4. This section is a basic segment under no-build conditions and a weaving section under build conditions. <p>Source: Fehr & Peers, 2010.</p>					

Impacts to Public Transportation

Public transportation within the Salida area would not be greatly affected during the build phase of the project. Bus routes along State Route 99 and State Route 219 (Kiernan Avenue) would have minor delays. Once construction is complete, the proposed project is expected to improve traffic flow.

The proposed project would not affect transit-dependent persons. While there are residents in the Salida Community area who do not or cannot drive a vehicle, these

needs are met by friends, relatives or by other means, including a fixed bus route, dial-a-ride, specialized dial-a-ride, fixed intercity bus routes, fixed interregional bus routes, and intercity and commuter rail service. Within the Salida community and Modesto area, there are also numerous taxi companies that offer service 24 hours a day. Ultimately, since public transportation systems would not be greatly affected by the project, any transit-dependent population would, likewise, not be affected.

Impacts to Pedestrian and Bikeway Facilities

Both build alternatives would provide pedestrian/bikeway facilities that are consistent with the Stanislaus County's planned future pedestrian/bikeway network. Based on the Stanislaus County Street Design Guidelines, arterials should provide a minimum 8-foot-wide detached sidewalk/bike path on each side of the roadway.

Avoidance, Minimization, and/or Mitigation Measures

The project would implement the following measures to reduce construction-related traffic impacts:

- The contractor would be required to prepare and implement a traffic management plan that would identify the locations of temporary detours and signage to facilitate local traffic patterns and through-traffic requirements.
- The project special provisions of the highway contract would require that emergency service providers (i.e., law enforcement, fire protection, and ambulance services) be given adequate advance notice of any street closures during the construction phases of the proposed project.
- Construction activities would be coordinated to avoid blocking or limiting access to homes and businesses to the extent possible. Residents and business owners would be notified in advance about potential access or parking problems before construction activities begin.
- Any interchange, ramp, or road closures required during construction would, to the extent possible, be limited to nighttime hours to reduce effects on businesses in the study area. Alternative 2 would provide temporary southbound ramp relocations north and south of Kiernan Avenue during construction.
- The traffic management plan would be prepared to address short-term disruptions in existing circulation patterns during construction; for example, the traffic management plan would identify the locations of temporary detours or temporary roads to facilitate local traffic circulation and through-traffic requirements.

2.1.7 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 United States Code 4331[b][2]). To further emphasize this point, the Federal Highway administration in its implementation of the National Environmental Policy Act (23 United States Code 109[h]) directs that final decisions regarding projects are to be made in the best overall public interest while 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 state's policy 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

A Visual Impact Assessment was prepared in June 2010 to assess visual impacts. The project area is in Stanislaus County about 65 feet above sea level on a floodplain just south of the Stanislaus River and 8 miles east of the San Joaquin River.

About 90 miles west lies the San Francisco Bay area. The beach at Santa Cruz is about 115 miles southwest. To the east about 50 miles is Mother Lode country in the Sierra Nevada foothills. Farther east is the Sierra Nevada Mountain Range and Yosemite National Park.

Project-area terrain is typical of this region: relatively flat with few distinct landforms such as rolling hills, mountains, or low lying valleys. Stanislaus County is in the heart of the San Joaquin Valley, one of the nation's largest agricultural areas. Dairy products, almonds, apricots, melons, tomatoes, wine grapes, peaches, walnuts, and poultry products are some of the county's top products.

The community of Salida lies south of Stockton on State Route 99 between the city of Manteca and the city of Modesto. State Route 219 (Kiernan Avenue), aligned northeast to southwest, passes over State Route 99. The project is in a commercial area within Salida. Although most of the land around Salida is agricultural, the land adjacent to the project area is mostly for businesses and residences.

Along State Route 219 (Kiernan Avenue), east of Sisk Road, the land is mostly used for agriculture. From Sisk Road west, however, along State Route 219 (Kiernan Avenue) to Salida Boulevard, the land use is mostly commercial and industrial. Developed areas in the vicinity include commercial businesses, light industrial, residences, and roadways.

The Visual Impact Assessment included a field review of distinct landscapes surrounding each part of the proposed project. The analysis was consistent with the Federal Highway Administration *Visual Impact Assessment for Highway Projects*. As part of the visual impact assessment, the following observation points were used to evaluate visual quality:

- Observation Point 1—The State Route 99 southbound off-ramp at the State Route 219 (Kiernan Avenue) overcrossing
- Observation Point 2—The intersection of State Route 219 (Kiernan Avenue) and Salida Boulevard
- Observation Point 3—Along State Route 99 near State Route 219 (Kiernan Avenue)
- Observation Point 4—The intersection of State Route 219 (Kiernan Avenue) and Sisk Road

Environmental Consequences

Views of State Route 219 (Kiernan Avenue)

Visual quality was evaluated on a scale from 1 to 7 (very low to very high). The evaluation assesses the differences between the existing conditions and those changes due to proposed roadway improvements. As noted in Table 2.14, both build alternatives have an average visual quality rating that is slightly lower than the existing condition.

**Table 2.14 Evaluation of Visual Quality on State Route 219
(Kiernan Avenue)**

Observation Point	Rating for Existing Avenue	Alternative 1 Rating	Alternative 2 Rating
1	2.70	2.70	2.70
2	2.70	2.50	2.36
3	2.38	2.35	2.32
4	2.57	2.05	2.05
Total:	10.35	9.60	9.43
Average:	2.58	2.40	2.35

For both build alternatives, local residents would experience a minimal decline in the surrounding visual environment as a result of the proposed project. The loss in visual quality would be minor and is mainly due to the addition of travel lanes to an existing roadway and the changes to freeway ramps.

Alternative 2 would have the most noticeable change to the visual environment. The existing diamond interchange would be changed to a hybrid diamond/loop interchange, altering the on- and off-ramps in both directions. Due to the existing urban character of the area, however, it would not change the overall visual environment of this portion of the Salida community.

Views from State Route 219 (Kiernan Avenue) toward Adjacent Views

Table 2.15 evaluates the views from Kiernan Avenue of the nearby setting after the proposed roadway improvements are built. Visual quality was evaluated on a scale from 1 to 7 (very low to very high).

**Table 2.15 Evaluation of the Visual Quality of Adjacent Settings as seen
from Kiernan Avenue**

Observation Point	Rating for Existing Avenue	Alternative 1 Rating	Alternative 2 Rating
1	2.44	2.27	2.22
2	2.05	2.22	2.00
3	2.28	2.08	2.30
4	2.0	1.99	2.05
Total:	8.77	8.56	8.57
Average:	2.2	2.14	2.14

Although building the project would degrade the view from some locations, travelers on State Route 99 and State Route 219 (Kiernan Avenue) would experience a small change in the visual environment as a result of the proposed project. The views from the road to adjacent areas would remain unchanged from current conditions.

Alternative 2 would have the most noticeable change to the visual environment. Although the existing diamond interchange would be changed to a hybrid diamond/loop interchange, altering the shape and size of the on- and off-ramps in both directions, the change would not alter the overall visual environment of this portion of the Salida community. Like Alternative 1, the view would be changed due to roadway improvements, but impacts would be low to minimal.

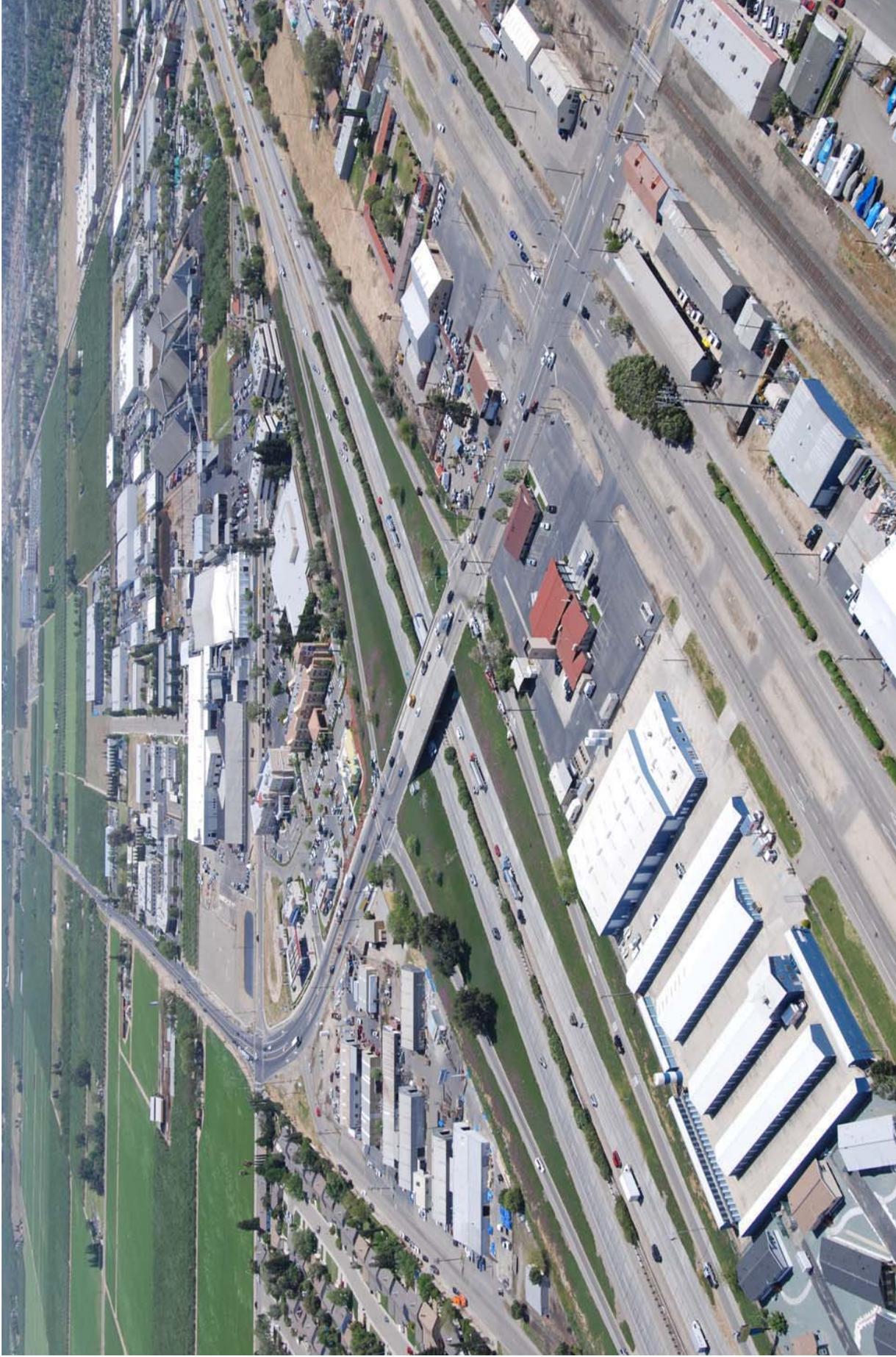
Street lights would be proposed in specific locations as part of the interchange improvements. With the existing light sources currently within the project area, new street lighting would not change an otherwise illuminated and urbanized environment. While the street lighting is not expected to generate a substantial amount of glare, for Alternative 2 possible additional lighting added to the new ramps may create a slight increase in night-time glare conditions for residents adjacent to the proposed freeway off- and on-ramps.

Rebuilding the State Route 99/State Route 219 (Kiernan Avenue) interchange would have a negligible impact on the visual environment within the project area. Visual impacts related to the proposed project are minor because the interchange already exists and is presently in use. Rebuilding the interchange would include landscaping to enhance local aesthetics. See Figures 2-2a to 2-2c for visual simulations.

Avoidance, Minimization, and/or Mitigation Measures

Overall impacts to “views of the road” result in some decline to the surrounding visual environment as a result of the proposed project. Changes to the view as a result of the project alternatives would marginally degrade all observation points. Overall, however, the proposed project would not dramatically change the view. The following measures would help reduce visual impacts:

- Architectural detailing and/or surface treatments consistent with the surrounding community should be incorporated into the new bridge design.
- Artistic soundwall design should be used to break up the built environment and enhance the driving experience. Soundwall design should be compatible with the surrounding area and meet community goals.



SOURCE: Visual Impact Assessment Kierman Avenue State Route 219/State Route 99 Interchange Reconstruction Project, June 2010.

Figure 2.2a
Visual Simulation Existing Conditions
EA # 10-0L330
10-STA-99-PM R21.9/R23.1
10-STA-219-PM 0.0/0.3

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Minimization and/or Mitigation Measures



SOURCE: Visual Impact Assessment Kiernan Avenue State Route 219/State Route 99 Interchange Reconstruction Project, June 2010.

Figure 2.2b

Visual Simulation Alternative 1

EA # 10-0L330

10-STA-99-PM R21.9/R23.1

10-STA-219-PM 0.0/0.3



SOURCE: Visual Impact Assessment Kiernan Avenue State Route 219/State Route 99 Interchange Reconstruction Project, June 2010.

Figure 2.2c
Visual Simulation Alternative 2
EA # 10-0L330
10-STA-99-PM R21.9/R23.1
10-STA-219-PM 0.0/0.3

- Soundwalls should be designed to discourage or prevent graffiti. Some examples of anti-graffiti soundwall design may include rough-textured finishes or uneven surfaces, graffiti-resistant coatings, and vine plantings of a type that would attach to walls.
- Replacement planting would include the replacement of removed landscaping.
- Areas affected or disturbed by construction would be replanted with a standard replacement landscape and irrigation systems.

2.2 Physical Environment

2.2.1 Water Quality and Storm Water Runoff

Regulatory Setting

Section 401 of the Clean Water Act requires water quality certification from the State Water Resources Control Board or from a Regional Water Quality Control Board when a project requires a Clean Water Act Section 404 permit. Section 404 of the Clean Water Act requires a permit from the United States Army Corps of Engineers to discharge dredged or fill material into waters of the United States.

Along with Clean Water Act Section 401, Clean Water Act Section 402 establishes the National Pollutant Discharge Elimination System permit for the discharge of any pollutant into waters of the United States. The federal Environmental Protection Agency has delegated administration of the National Pollutant Discharge Elimination System program to the State Water Regional Control Board and nine Regional Water Quality Control Boards. The State Water Regional Control Board and Regional Water Quality Control Board also regulate other waste discharges onto land within California through the issuance of waste discharge requirements under authority of the Porter-Cologne Water Quality Act.

The State Regional Water Quality Control Board has developed and issued a statewide National Pollutant Discharge Elimination System permit to regulate storm water discharges from all Caltrans activities on its highways and facilities. Caltrans construction projects are regulated under the statewide permit, and projects performed by other entities on Caltrans right-of-way (encroachments) are regulated by the Regional Water Quality Control Board's Statewide General Construction Permit. All construction projects over one acre require a Storm Water Pollution Prevention Plan

to be prepared and implemented during construction. Caltrans activities less than one acre require a Water Pollution Control Program.

Affected Environment

A Draft Water Quality Assessment Report was completed for the project in October 2010. In addition, a Stormwater Data Report (June 2010) and Preliminary Drainage Report (February 2010) were prepared by the project engineer. The results of these reports are summarized in the following section.

The project area is in the San Joaquin River Basin. The Stanislaus River, which flows approximately 2 miles northwest of the project site and would not be directly affected by the project, is one of the largest rivers to join with the San Joaquin River on its way to the Sacramento-San Joaquin River Delta. The proposed project is within the Modesto groundwater subbasin that lies between the Stanislaus River to the north, the Tuolumne River to the south, the San Joaquin River to the west, and the Sierra Nevada foothills to the east. The surface area of the subbasin is 247,000 acres.

There are four known aquifers (underground water sources) in the Modesto groundwater subbasin. The cities of Modesto, Oakdale, and Riverbank and the communities of Salida, Empire, and Waterford use this groundwater to supply their residents. Groundwater in the Modesto subbasin is for the most part of good quality. Locally, some problem pollutants include totally dissolved solids, nitrates, radionuclides, dibromochloropropane, and volatile organic compounds. In addition to these pollutants, localized areas of human-made contamination such as gasoline and solvents are present.

The portion of the Stanislaus River nearest the proposed project is currently on the Clean Water Act (section 303[d]) list of Water Quality Limited Segments and therefore does not currently meet state water-quality standards. Diazinon, pesticides, and mercury are known pollutants exceeding current standards for the river.

Environmental Consequences

Short-Term (temporary) Water-Quality Impacts

During construction, the State Route 99/State Route 219 (Kiernan Avenue) interchange project has potential to produce temporary water quality impacts caused by grading activities and vegetation removal, which increase erosion (movement of soils into water bodies). Stormwater runoff from the proposed project may transport pollutants to nearby water resources, such as storm drains, if best-management practices are not properly used. Generally, as the disturbed-soil areas increase, the

potential for temporary water-quality impacts also increases. Alternative 1 has an estimated disturbed-soil area of approximately 21 acres. Alternative 2 has an estimated disturbed-soil area of approximately 26 acres.

Fueling or maintenance of construction vehicles would also occur within the proposed project during construction, resulting in a risk of accidental spills or releases of fuels, oils, or other potentially toxic materials. An accidental release of these materials may pose a threat to water quality if contaminants enter storm drains, open channels, or areas where water can pool. The effects from an accidental release depends on the amount and type of material spilled.

Long-Term (permanent) Water-Quality Impacts

Potential long-term water-quality impacts are due to changes in stormwater drainage. Because the project would result in a permanent increase of impervious surfaces (surfaces water cannot penetrate), it would also result in a permanent increase in runoff and increased pollution. The primary pollutants would be sediments, oil by-products, and metals. These substances are washed off the highway surface by rainfall and become runoff. Runoff in large enough amounts occurs only during heavy storms that in turn cause the pollutants to be greatly diluted. These storms cause some high flows in the drainage systems, further diluting the pollutants as they are carried from the source.

Caltrans currently uses a statewide Storm Water Management Plan. The Storm Water Management Plan addresses Caltrans runoff impacts on water quality standards, develops a level of pollutant quantities that a body of water can receive while still meeting water quality standards (total maximum daily load), and watershed planning. The Storm Water Management Plan would also be used to characterize runoff from Caltrans roadways and storm-drain systems owned or operated by Caltrans and aid Caltrans in determining appropriate and adequate best-management practices.

The proposed project design would incorporate permanent erosion control elements: primarily permanent vegetation to ensure that stormwater runoff does not cause soil erosion. Use of the project-specific long-term mitigation measures, design best-management practices, and if necessary, treatment best-management practices, would also reduce or avoid impacts on water quality.

It should be noted that, due to the lack of surface water resources in the immediate project area, long-term water-quality impacts only have the potential to occur at nearby storm drains.

Drainage

The offsite drainage design for the proposed project is based on the procedures presented in the Highway Design Manual, Sixth Edition, California Department of Transportation and guidelines received from Caltrans District 10 Hydraulics Division. There are some existing offsite or cross-culvert facilities within the limits of the project, mostly crossing or contained in the local streets and State Route 219 (Kiernan Avenue). The project would not have a significant effect on the hydrologic or hydraulic conditions of any offsite drainage facilities owned by Caltrans or any other agency.

New pavement-drainage inlets would be placed at necessary locations to eliminate concentrated flow from crossing the roadway. Without proper drainage design, there are a number of locations where sheet flow is possible: at the ends of median curbs along sloped pavement; at locations of sloped reversals; and at locations where inlet capacity is insufficient.

The project includes construction along the outside shoulder of all ramps to make room for pavement widening. The widening would require modifications to the adjacent cut or fill slopes. Modifications to the cut slopes include re-grading the slopes or the placement of retaining walls. Changes to the nearby fill slopes would include building retaining walls or widening the fill slopes. Retaining walls would be designed to capture and convey runoff from the slopes above the walls to drains at the bottom of the walls. Retaining walls made of fill would have inlets along the tops of the walls at the edge of the roadway shoulders.

There are two forms of underdrains on this project. First, underdrains along the edge of the State Route 99 pavement would intercept groundwater before the water enters the structural section of the pavement, followed by delivering the intercepted water to the stormwater pump station. Second, the underdrains built along State Route 219 (Kiernan Avenue) and other local roads would act as discharge points for stormwater runoff. These underdrains are meant to hold a certain volume of runoff in pipes and surrounding absorption zone, allowing the runoff to seep into the ground through holes in the pipes.

The project site is also within the Modesto Irrigation District, a major water supplier in the Modesto groundwater subbasin. The Modesto Irrigation District is a public utility that supplies surface water, groundwater, and electrical service to agricultural and municipal customers throughout its 101,700-acre service area. The Modesto Irrigation District has both irrigation wells and drainage pumping wells. The Modesto

Irrigation District owns and maintains lateral canal number 6 that flows through the southern portion of the project area.

With the loss of water storage capacity in the existing retention basins and the increase in impervious (pavement) area, both Alternatives 1 and 2 would add additional retention basins to offset the loss in volume (amount of water stored), providing additional volume for the increased pavement area. With an adequate margin of error, the retention basins would have the capacity to hold two 10-year, 24-hour storms and are sized for the ultimate build-out condition using one 10-year, 24-hour storm.

Under Alternative 1, one existing retention basin would be removed, one existing retention basin would be modified, and two additional retention basins would be built (for a total of three retention basins). For Alternative 2, one existing retention basin would be removed, one existing retention basin would be modified, and four additional retention basins would be built (for a total of five retention basins).

The existing highway stormwater pump station would be demolished as part of the proposed project. The pump station would be replaced with a new pump station just north of the existing pump station. The existing storage box would remain, with the existing box extended to connect to the new pump station.

Avoidance, Minimization, and/or Mitigation Measures

With the following avoidance, minimization, and proposed mitigation measures incorporated, the proposed project would have minimal affect on water quality:

- Preparation and use of construction-site best-management practices in compliance with the provisions of Caltrans' Statewide National Pollutant Discharge Elimination System permit and any subsequent permit as it relates to construction activities for the project. This would include submission of a notice of construction to the Regional Water Quality Control Board at least 30 days before the start of construction; preparation and implementation of a Stormwater Pollution Prevention Plan; and submission of a notice of construction completion to the Regional Water Quality Control Board upon completion of construction and stabilization of the project site.
- Consideration and incorporation of design pollution prevention and treatment control best-management practices for the project, in accordance with the procedures outlined in the Stormwater Quality Handbooks, Project Planning and Design Guide, would be followed. This would include coordination with the

Regional Water Quality Control Board with respect to feasibility, maintenance, and monitoring of treatment control best-management practices as set forth in the Caltrans' Statewide Stormwater Management Plan.

- Identify all potential locations of concentrated flow and provide proper pavement drainage design to reduce concentrated flow to the accepted maximum of 0.1 cubic feet per second.
- Where existing fill slopes are changed, all existing drains or swales that are affected should be relocated, extended, or altered as necessary to accommodate drainage.
- Where affected, the existing underdrains would be rerouted or relocated to be next to the changed edge of pavement. Any reconstruction of underdrains would be to current Caltrans standards.
- Additional retention basins are required to offset the loss in volume (amount of water stored) and provide additional volume for the increased pavement area. Alternative 1 would remove one existing retention basin, modify a second existing retention basin, and build two additional retention basins (for a total of three retention basins). Alternative 2 would remove one existing retention basin, modify a second existing retention basin and build four new retention basins (for a total of five retention basins). With an adequate margin of error, the retention basins would have the capacity to hold two 10-year, 24-hour storms and are sized for the ultimate build-out condition using one 10-year, 24-hour storm.
- The existing pump station should be replaced with a new pump station to be located just north of the existing pump station. The existing storage box would remain, with the existing box extended to connect to the new pump station. The new pump station would discharge to the same 30-inch storm drain that serves the existing pump station. The new pump station peak discharge would be limited to the existing peak discharge of 3,500 gallons per minute, with a total dynamic head of 25 feet. There are two pumps with this capacity, plus a low flow pump with capacity of 300 gallons per minute. In the new pump station, the low-flow or groundwater pump would be in a nearby structure with a separate wet well.

2.2.2 Paleontology

Regulatory Setting

Paleontology is the study of life in past geologic times based on fossil plants and animals. A number of federal statutes address paleontological resources, their treatment, and funding for mitigation as a part of federally authorized or funded

projects (e.g., Antiquities Act of 1906 [16 United States Code 431-433]; Federal-Aid Highway Act of 1935 [20 United States Code 78]). Under California law, the California Environmental Quality Act, the California Administrative Code, Title 14, Section 4306 and subsections, and Public Resources Code Section 5097.5 protect paleontological resources.

Affected Environment

A Paleontological Identification and Evaluation Report was prepared in March 2010. The ground in the project area is primarily flat due to natural topography and current and historic agricultural land uses. The project lies in the north-central portion of the San Joaquin Valley, a large structural trough situated between the coast ranges and the Sierra Nevada Mountain Range. At this location, the San Joaquin Valley is filled with marine and alluvial sediments deposited by the Stanislaus River. These deposits have in the past produced important fossils.

The project area is underlain by two paleontologically sensitive Pleistocene formations consisting of the Riverbank and Modesto formations. In the past, vertebrate (animals with backbones) and invertebrate (animals without backbones) fossils have been found in both the Riverbank and Modesto formations in the project vicinity.

A field survey of the project area, which included visual inspection of areas with exposures that might reasonably be predicted to contain fossils, documented the presence of any previously unrecorded fossil sites. Although no fossils were reported within the project area, the presence of fossils in sediments of the Riverbank and Modesto formations elsewhere in the vicinity suggests a high potential for fossil remains to be uncovered by project excavations.

Recovered fossil remains could provide a more comprehensive view of the diversity of animal and plant life that once existed in Stanislaus County and could result in a more accurate reconstruction of the geologic and paleobiologic history of the San Joaquin Valley.

Environmental Consequences

This project would modify or excavate three retention basins for Alternative 1 and five retention basins for Alternative 2. Potential impacts on paleontological resources resulting from construction of the project would primarily involve terrain modification. The entire area of potential disturbance has been mapped on the Late Pleistocene Modesto Formation, and any excavation into original soils would affect

these Late Pleistocene deposits, potentially disturbing paleontologically sensitive strata and affecting paleontological resources. Excavation work includes all digging for traffic signs, lighting, utility relocation, retention basins, water pipes, pump station relocation, and vegetation clearing. Excavation for roadway reconstruction is not anticipated to go deeper than 2 to 3 feet and may only affect artificial fill beneath the current road. If there is no artificial fill beneath the road, this work has the potential to encounter the Modesto Formation.

There is also the potential for excavation to affect the deeper Middle Pleistocene Riverbank Formation during excavation for 30-foot- deep traffic signals and 60-foot- deep piles. The Riverbank Formation may also be encountered during excavation for the center-bridge pier. Excavation for the 7-foot-deep center-bridge pier would take place in portions of the area of potential disturbance where 20 feet was previously cut for the construction of State Route 99, leading to possible impacts of undisturbed Middle Pleistocene layers.

Table 2.16 contains general excavation parameters for project ground disturbance.

Table 2.16 General Excavation Parameters

Improvement	Excavation Depth	Width/Area	Formation
Roadway Reconstruction	Maximum of 3 feet	Not specified	Artificial fill, possibly Modesto Formation
Abutments	5 feet	165 feet by 8 feet	Modesto Formation
Traffic Signage	5 feet	2-foot-wide trench	Modesto Formation
Center-Bridge Pier	7 feet (~27 feet below original ground surface)	14 feet by 16 feet	Modesto Formation, possibly Riverbank Formation
Lighting	6 feet	2-foot-wide trench	Modesto Formation
Utility Relocation	8 feet	10-foot-wide trench	Modesto Formation
Basin Water Pipes	8 feet	10 feet	Modesto Formation
Retention Basins	10 feet	Not specified	Modesto Formation
Pump Station Relocation	12 feet	900 square feet	Modesto Formation.
Traffic Signals	30 feet	3-foot-wide trench	Modesto Formation, possibly Riverbank Formation
Piles	60 feet	14-inch diameter	Modesto Formation, possibly Riverbank Formation

Avoidance, Minimization, and/or Mitigation Measures

Because the proposed project would affect paleontologically sensitive strata that are potentially of scientific significance, a Paleontological Mitigation Plan would be developed and implemented. The implementation of the Paleontological Mitigation Plan before construction would reduce potential adverse impacts to paleontological

resources that would otherwise result from construction. This Paleontological Mitigation Plan should be synthesized from outlines and guidelines provided by Caltrans and the Society of Vertebrate Paleontology and be specifically tailored to the resources and sedimentary formations encountered by the project. The Society of Vertebrate Paleontology and the University of California Museum of Paleontology at University of California Berkeley would be consulted to ensure that the full range of potential scientific research domains are adequately addressed.

In areas determined to have a high potential for paleontological resources, the Paleontological Mitigation Plan should include the following:

- A preliminary survey and surface salvage would be done prior to construction.
- A qualified principal paleontologist would be present at pre-grading meetings to consult with grading and excavation contractors.
- Monitoring and salvage would be done during excavation. A paleontological monitor, under the direction of the qualified principal paleontologist, would be on-site at all times during original grading involving sensitive geologic formations to inspect road cuts for fossils.
- Preparation, such as screen washing to recover small specimens (if applicable), would be done. Specimen preparation to a point of stabilization, including identification, cataloging, curation, and storage of specimens would also be carried out.
- A final report would be done to document outlines the mitigation of any finds and their significance. The report would be deposited in a scientific institution with any paleontological collections.

The Paleontological Mitigation Plan would assist Caltrans in complying with environmental laws and regulations requiring mitigation of impacts on paleontological macrofossil resources if found within the project.

2.2.3 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 and materials are the Resource Conservation and Recovery Act of 1976 and the Comprehensive Environmental Response, Compensation and Liability Act of 1980. The purpose of the 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. The Resource Conservation and Recovery Act provides for “cradle to grave” regulation of hazardous wastes. Other federal laws include the following:

- Community Environmental Response Facilitation Act of 1992
- Clean Water Act
- Clean Air Act
- Safe Drinking Water Act
- Occupational Safety and Health Act
- Atomic Energy Act
- Toxic Substances Control Act
- Federal Insecticide, Fungicide, and Rodenticide Act

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 disturbed during project construction is vital.

Affected Environment

A Phase 1 Initial Site Assessment was completed for the project in December 2004. A subsequent 2010 memorandum (including review and records search) was conducted to update and supplement the 2004 Initial Site Assessment, as needed. The purpose of this study was to determine whether the improvement activities associated with the proposed project could be affected by any recorded or visible hazardous waste problems within and adjacent to the interchange right-of-way, and to recommend any additional Initial Site Assessment work, as appropriate.

The following was done:

- Performed a governmental records search to obtain a listing of properties or known incidents shown on federal and state databases for hazardous waste sites within the project area.
- Conducted a site visit to identify any visible exterior areas of potential contamination that might affect the proposed project.
- Examined soils, geotechnical, and groundwater data.

Physical Site Inspection

The physical site inspection did not reveal any evidence of spills or hazardous waste contamination within the project limits. Several uses are potentially associated with hazardous wastes or materials within the project area. A gas station is present but no evidence of hazardous spills or contamination was found.

Several issues that may warrant additional testing or study were found, including thermoplastic striping and cylindrical transformers. A portion of the proposed project may also require additional testing for potential hazards and include lands used for agricultural production. Additional studies for asbestos building materials may be needed on portions of buildings constructed before 1969. The status of the historic-era underground storage tank at the intersection of Kiernan Avenue and Sisk Road should also be determined.

Database and Regulatory Reviews

A search of environmental regulatory databases in 2004 and a subsequent update in 2010 were conducted for proposed project and surrounding properties to determine whether documentation exists related to environmental incidents at the project site or surrounding properties.

The properties identified in the search were evaluated with respect to their potential to adversely affect the project. Three main criteria were used to evaluate whether the sites warranted further consideration: (1) proximity to the proposed project (less than 200 meters from edge of existing right-of-way); (2) groundwater flow from a site to the proposed project; and (3) surface-water flow or storm-water runoff from a site to the proposed project.

No national priority list or proposed national priority list, emergency response notification system, or record of decision, Toxic Substance Control Act, or superfund sites with consent agreement were identified within a 1-mile radius of the project.

One site in the 1-mile radius of the project has a record for an underground storage tank that is inactive but still onsite. Table 2.17 contains information from the database search.

Table 2.17 Hazardous Materials Databases

Address	Description
4648 Kiernan Avenue	This site is listed in a database used to track inactive underground storage tanks. Status—open but inactive.

Source: 2004 Initial Site Assessment and 2010 updated records search

Environmental Consequences

A number of structures and buildings built prior to 1969 occur within the existing and proposed right-of-way. Due to the age of these structures there is a potential for presence of asbestos-containing materials and lead-based paint.

A portion of the properties to be acquired extend through lands used for agricultural production, specifically at the State Route 219 (Kiernan Avenue)/Sisk Road intersection. Pesticides, fertilizers, and insecticides may be present within the soils.

In addition to the above land use sites, portions of the properties to be acquired also extend through lands used for light industrial purposes. Light-industrial businesses include petroleum-products distribution, commercial recycling, and a diversion resources site. No spills or other evidence of hazardous waste contamination were observed within the project right-of-way.

Commercial land uses observed within the project limits include two gas stations, a car wash, and fast-food restaurant. No spills or evidence of hazardous waste contamination was observed.

Observations of potentially hazardous materials within the project limits included thermoplastic striping (roadway lines) and cylindrical transformers. Thermoplastic striping was observed along the traffic lanes of State Route 99 and State Route 219 (Kiernan Avenue). Cylindrical transformers were observed along the north side of State Route 219 (Kiernan Avenue) between State Route 99 and Kiernan Court. Cylindrical transformers could contain polychlorinated biphenyls and would need to be handled in conjunction with the appropriate standards and procedures for removal. No spills or other evidence of hazardous-waste contamination were observed.

Aerially-deposited lead is a hazardous material potentially found within the project limits. If the aerially-deposited lead concentration levels are above 90 percent above confidence limits it is classified as California hazardous waste. Accordingly, during construction, aerially-deposited lead hazards could adversely affect worker safety. An aerially-deposited lead study was conducted along State Route 99 in 2007 between the post miles 22.4 to 22.7 which is 0.3 miles within the proposed project limits. Based on the finding in this study, soil generated within that project's limits for the top two-feet was not classified as a California hazardous waste. For the proposed project, conditions are expected to be similar, and in confirmation, testing will be required during the design phase to determine the amount of aerially-deposited lead levels within the project limits.

Review of agency databases did not identify any sites with potential to affect the project.

Other than those noted above during the site study of the project area, environmental areas of concern were not readily identified or apparent based on the scope of work performed in this project. Phase I Environmental Site Assessment findings, environmental conditions, or issues of concern, other than noted above, were not identified or indicated.

Avoidance, Minimization, and/or Mitigation Measures

- Testing for hazardous levels of aerially-deposited lead would be done during the design phase. The appropriate standard special provisions would be used during the design phase once the analytical results are known. A Lead Compliance Plan would be required no matter what levels of lead are in the soil. If soil testing

results in a determination of elevated levels of lead, it may be possible to encapsulate soil following the Department of Toxic Substances Control Act variance under certain conditions. If this is not possible, then soil that is hazardous material would need to be disposed of in a Class 1 landfill.

- Demolition of bridges and buildings built prior to 1969 would require an assessment of asbestos-containing building materials and lead-based paint. An asbestos investigation should be performed by an inspector certified by the Asbestos Hazardous Emergency Response Act under Toxic Substance Control Act Title II. Lead-based paint surveys should be conducted by an inspector certified by the California Occupational Safety and Health Administration under State of California rules and regulations. These surveys would be conducted by Caltrans Right-of-Way during acquisition and/or prior to building demolition. Asbestos-containing building materials and lead-based paint should be surveyed and abated (as needed) by using a contractor certified to perform such work.
- Past land use studies suggest the potential for hazardous chemical contamination from organochlorine pesticides, organophosphorous pesticides, chlorinated herbicides, and heavy metals other than lead. These potential contaminants may be present within the properties to be acquired for right-of-way. Consequently, additional studies for these contaminants should be done on selected properties within the project area to minimize future liability. A risk assessment of the potential hazards (pesticides and heavy metal contamination) should be conducted during the design phase on properties to be acquired throughout the project area and along the railroad right-of-way.
- Cylindrical transformers are located within project right-of-way limits and may need to be relocated during the course of the project. These transformers could contain polychlorinated biphenyls that are known to be harmful to humans and the environment. The transformers would need to be handled using the appropriate standards and procedures for their removal. The proper utility company would be notified.
- Thermoplastic striping (roadway paint) removal activity would be conducted in compliance with all applicable laws and regulations such as the guidelines by the California Occupational Office of Safety and Health, San Joaquin Valley Unified Air Pollution Control District, and applicable best-management practices. Standard special provisions would be used for removal of the traffic stripe.
- Prior to the start of any construction activities, including grading or ground disturbance, it is recommended that the presence or absence of the historic-era

underground storage tank at 4648 Kiernan Avenue be determined to avoid accidental rupture of the tank during earth-moving activities.

2.2.4 Air Quality

Regulatory Setting

The Clean Air Act, as amended in 1990, is the federal law that governs air quality. Its counterpart in California is the California Clean Air Act of 1988. These laws 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. Standards have been established for six criteria pollutants that have been linked to potential health concerns: carbon monoxide, nitrogen dioxide, ozone, particulate matter, lead, and sulfur dioxide.

Under the 1990 Clean Air Act Amendments, the United States Department of Transportation cannot fund, authorize, or approve federal actions to support programs or projects that are not first found to conform to a state implementation plan for achieving the goals of the Clean Air Act. Conformity with the Clean Air Act takes place at the regional level and at the project level. The proposed project must conform at both levels to be approved.

Regional-level conformity in California is concerned with how well the region is meeting the standards set for carbon monoxide, nitrogen dioxide, ozone, and particulate matter. California is in attainment for the other criteria pollutants. At the regional level, regional transportation plans are developed that include all of the transportation projects planned for in a region over a period of about 20 years. Based on the projects included in the regional transportation plan, an air quality model is used to determine whether or not those projects would conform to emission budgets or other tests showing that attainment requirements of the Clean Air Act are met.

If the conformity analysis is successful, the regional planning organization, such as the San Joaquin Valley Air Pollution Control District and the appropriate federal agencies, such as the Federal Highway Administration, determines if the regional transportation plan is in conformity with the state plan for achieving the goals of the Clean Air Act. Otherwise, the projects in the regional transportation plan must be changed until conformity is attained. If the design and scope of the proposed transportation projects are the same as described in the regional transportation plan,

then the proposed project meets regional conformity requirements for purposes of project-level analysis.

Conformity at the project level also requires “hot-spot” analysis if an area is “non-attainment” or “maintenance” area for carbon monoxide and/or particulate matter. A region is a “non-attainment” area if at one or more of the monitoring stations carbon dioxide or particulate-matter levels are too high. Areas that were previously designated as non-attainment areas but have recently met the standard are called “maintenance” areas.

In general, projects must not cause the carbon monoxide standard to be violated, and in non-attainment areas the project must not cause any increase in the number and severity of violations. If a known carbon monoxide or particulate-matter violation is located in the project vicinity, the project must include measures to reduce or eliminate the existing violation(s).

Affected Environment

An Air Quality Assessment Report and Air Quality Conformity Analysis Report were completed for the project in July 2010.

Meteorology

A region’s topographic features (flat land, mountains) have a direct correlation with air pollution flow and therefore are used to determine the boundary of air basins. The proposed project is in the San Joaquin Valley air basin that covers about 25,000 square miles and includes Fresno, Kings, Madera, Merced, San Joaquin, Stanislaus and Tulare counties and the western portion of Kern County. The San Joaquin Valley air-basin boundaries are the Sierra Nevada Mountain Range in the east (8,000 to 14,000 feet in elevation), the coast ranges in the west (averaging 3,000 feet in elevation), and the Tehachapi Mountains in the south (6,000 to 8,000 feet in elevation). The San Joaquin Valley is basically flat with a slight downward tilt to the northwest. The valley opens to the sea at the Carquinez Straits where the San Joaquin-Sacramento Delta empties into San Francisco Bay. An aerial view of the San Joaquin Valley air basin would resemble a bowl opening only to the north. These topographic features restrict air movement through and out of the basin.

Although marine air generally flows into the basin from the San Joaquin River Delta, the coast ranges hinder wind access into the San Joaquin Valley air basin from the west. The Tehachapi Mountains prevent southerly passage of airflow, and the high Sierra Nevada Mountain Range is a significant barrier to the east. These topographic

features result in weak airflow blocked vertically by high barometric pressure over the San Joaquin Valley air basin. As a result, the San Joaquin Valley air basin is highly susceptible to pollutant accumulation over time. Most of the surrounding mountains are above the normal 1,500- to 3,000-foot elevation of summer inversion layers.

The State Route 99/State Route 219 (Kiernan Avenue) Interchange Reconstruction Project was included in the regional emissions analysis done by the Stanislaus Council of Governments for the conforming 2011 Regional Transportation Plan. The project's design concept and scope have not changed significantly from what was analyzed in the Regional Transportation Plan. This analysis found that the Regional Transportation Plan and the individual projects contained in the plan are conforming projects. The projects would have air-quality impacts consistent with those identified in the state plans for achieving the national ambient air-quality standards.

Air Pollution Constituents

Pursuant to the federal Clean Air Act of 1970, the U.S. Environmental Protection Agency established national ambient air-quality standards. The national ambient air-quality standards were established for major pollutants termed "criteria" pollutants. Criteria pollutants are defined as those pollutants for which the federal and state governments have established ambient air-quality standards, or criteria, for outdoor concentrations in order to protect public health. The national ambient air-quality standard is two tiered: first, protect public health; and second, prevent degradation of the environment (e.g., impairment of visibility, damage to vegetation and property).

The criteria pollutants are ozone, carbon monoxide, suspended particulate matter (10 microns or less; and 2.5 microns or less), nitrogen dioxide, sulfur dioxide, and lead. The Environmental Protection Agency established national air-quality standards for ground-level ozone and for fine particulate matter (particulate matter 2.5 microns or less in diameter) in 1997. The primary standards for these pollutants and the health effects from exposure to the criteria pollutants are found in Table 2.18.

Table 2.18 Federal and State Ambient Air-Quality Standards

Pollutant	Averaging Time	State Standard	Federal Standard	Health and Atmospheric Effects	Typical Sources
Ozone (O ₃) ^a	1 hour 8 hours	0.09 ppm 0.070 ppm	– ^b 0.075 ppm	High concentrations irritate lungs. Long-term exposure may cause lung tissue damage. Long-term exposure damages plant materials and reduces crop productivity. Precursor organic compounds include a number of known toxic air contaminants.	Low-altitude ozone is almost entirely formed from reactive organic gases (ROG) and nitrogen oxides (NO _x) in the presence of sunlight and heat. Major sources include motor vehicles and other mobile sources, solvent evaporation, and industrial and other combustion processes. Biologically-produced ROG may also contribute.
Carbon Monoxide (CO)	1 hour 8 hours 8 hours (Lake Tahoe)	20 ppm 9.0 ppm ^c 6 ppm	35 ppm 9 ppm –	Asphyxiant. CO interferes with the transfer of oxygen to the blood and deprives sensitive tissues of oxygen.	Combustion sources, especially gasoline-powered engines and motor vehicles. CO is the traditional signature pollutant for on-road mobile sources at the local and neighborhood scale.
Respirable Particulate Matter (PM ₁₀) ^a	24 hours Annual	50 µg/m ³ 20 µg/m ³	150 µg/m ³ –	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 PM ₁₀ .	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).
Fine Particulate Matter (PM _{2.5}) ^a	24 hours Annual	– 12 µg/m ³	35 µg/m ³ 15 µg/m ³	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and produces surface soiling. Most diesel exhaust particulate matter (a toxic air contaminant) is in the PM _{2.5} size range. Many aerosol and solid compounds are part of PM 2.5.	Combustion including motor vehicles, other mobile sources, and industrial activities; residential and agricultural burning; also formed through atmospheric chemical (including photochemical) reactions involving other pollutants including NO _x , sulfur oxides (SO _x), ammonia, and ROG.

Pollutant	Averaging Time	State Standard	Federal Standard	Health and Atmospheric Effects	Typical Sources
Nitrogen Dioxide (NO ₂)	1 hour Annual	0.18 <u>ppm</u> 0.030 ppm	– 0.053 <u>ppm</u>	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown. Contributes to acid rain.	Motor vehicles and other mobile sources; refineries; industrial operations.
Sulfur Dioxide (SO ₂)	1 hour 3 hours 24 hours Annual	0.25 <u>ppm</u> – 0.04 <u>ppm</u> –	– 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.
Lead (Pb) ^d	Monthly Quarterly	1.5 <u>µg/m³</u> –	– 1.5 <u>µg/m³</u>	Disturbs gastrointestinal system. Causes anemia, kidney disease, and neuromuscular and neurological dysfunction. Also considered a toxic air contaminant.	Primary: lead-based industrial process like battery production and smelters. Past: lead paint, leaded gasoline. Moderate to high levels of aerially deposited lead from gasoline may still be present in soils along major roads, and can be a problem if large amounts of soil are disturbed.

Sources: California Air Resources Board Ambient Air Quality Standards chart, 02/16/2010
(<http://www.arb.ca.gov/research/aaqs/aaqs2.pdf>)

Sonoma-Marina Area Rail Transit Draft Air Pollutant Standards and Effects table, November 2005, page 3-52.
U.S. EPA and California Air Resources Board air toxics websites, 05/17/2006

Notes: ppm = parts per million; µg/m³ = micrograms per cubic meter

^a Annual PM₁₀ NAAQS revoked October 2006; was 50 µg/m³. 24-hr. PM_{2.5} NAAQS tightened October 2006; was 65 µg/m³.

^b 12/22/2006 Federal court decision may affect applicability of Federal 1-hour ozone standard. Prior to 6/2005, the 1-hour standard was 0.12 ppm. Case is still in litigation.

^c Rounding to an integer value is not allowed for the state 8-hour CO standard. A violation occurs at or above 9.05 ppm.

^d The ARB has identified lead, 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, PM_{2.5}. Both the ARB and U.S. EPA have identified various organic compounds that are precursors to ozone and PM_{2.5} as toxic air contaminants. There is no threshold level of exposure for adverse health effects determined for toxic air contaminants, and control measures may apply at ambient concentrations below any criteria levels specified for these pollutants or the general categories of pollutants to which they belong.

Air quality monitoring stations are located throughout the nation and maintained by the local air districts and state air quality-regulating agencies. Data collected at permanent monitoring stations are used by the Environmental Protection Agency to identify regions as attainment or non-attainment, depending on whether the regions met the requirements stated in the primary national ambient air-quality standards.

Non-attainment areas have additional restrictions as required by the Environmental Protection Agency. In addition, different classifications of attainment, such as

marginal, moderate, serious, severe, and extreme are used to classify each air basin in the state on a pollutant-by-pollutant basis. The classifications are used as a foundation to create air-quality management strategies to improve air quality and comply with the national ambient air-quality standards. The San Joaquin Valley air basin’s attainment status for each of the criteria pollutants is listed in Table 2.19.

Table 2.19 Attainment Status of Criteria Pollutants in the San Joaquin Valley Air Basin

Pollutant	Federal Standards	State Standards
Ozone - 1 hour	No Federal Standard	Nonattainment
Ozone - 8 hour	Nonattainment/Extreme ^a	Nonattainment
PM ₁₀	Attainment/Maintenance ^b	Nonattainment
PM _{2.5}	Nonattainment ^c	Nonattainment
CO – Modesto Urbanized Area	Attainment/ Maintenance	Attainment/Unclassified
NO ₂	Attainment/Unclassified	Attainment
Sulfur Dioxide	Attainment/Unclassified	Attainment
Lead	*No Designation	Attainment
Hydrogen Sulfide	*No Federal Standard	Unclassified
Sulfates	*No Federal Standard	Attainment
Visibility Reducing Particles	*No Federal Standard	Unclassified

^a The San Joaquin Valley was reclassified from a Serious nonattainment area for the 8-hour ozone standard to Extreme effective June 4, 2010.

^b On September 25, 2008, EPA redesignated the San Joaquin Valley to attainment for the PM₁₀ National Ambient Air Quality Standard (NAAQS) and approved the PM₁₀ Maintenance Plan.

^c The San Joaquin Valley is designated nonattainment for the 1997 PM_{2.5} federal standards. EPA designations for the 2006 PM_{2.5} standards will be finalized in December 2009. The district has determined, as of the 2004-06 PM_{2.5} data, that the San Joaquin Valley has attained the 1997 24-Hour PM_{2.5} standard.

Source: San Joaquin Valley Air Pollution Control District, 2010. www.valleyair.org. July.

Local Air Quality

The project is within the jurisdiction of the San Joaquin Valley Unified Air Pollution Control District responsible for monitoring air quality at several locations within the San Joaquin Valley. The closest multi-pollutant monitoring site that has data available for most pollutants is in the city of Modesto. The city’s air quality trends represent the ambient air quality in the project area.

The two pollutants known to exceed the state standards in the project area are regional pollutants. Ozone and particulate matter 10 microns are regional emissions and are not determined by proximity to individual sources, but show a relative uniformity over a region. Thus, the data shown in Table 2.18 for these pollutants provide a good characterization of levels of these pollutants within the project site. The pollutants monitored are carbon monoxide, ozone, particulate matter less than 10

microns, particulate matter less than 2.5 microns, and nitrogen dioxide. Table 2.20 summarizes exceedances of state and federal standards at this monitoring site from 2007 through 2009.

The data shows that the monitor did not exceed state or federal particulate matter 10 microns 24-hour standards during the three-year period. The pollutant concentrations exceeded the federal particulate matter 2.5 microns 24-hour standard (98th percentile), as well as state particulate matter 2.5 microns annual standard, during the three-year period. Eight-hour ozone levels exceeded both state and federal standards in the years 2007, 2008 and 2009. Table 2.20 shows that carbon monoxide and nitrogen dioxide levels are well below relevant state and federal standards. There are no sulfur dioxide monitors within the project area.

Table 2.20 Local Air-Quality Levels

Pollutant	Standard	2007	2008	2009
Carbon Monoxide				
Maximum 1-hour concentration (parts per million)		6.9	3.7	ND
Number of days exceeded:	State: > 20 parts per million	0	0	ND
	Federal: > 35 parts per million	0	0	ND
Maximum 8-hour concentration (parts per million)		3.16	1.94	2.41
Number of days exceeded:	State: > 9 parts per million	0	0	0
	Federal: > 9 parts per million	0	0	0
Ozone				
Maximum 1-hour concentration (parts per million)		0.100	0.127	0.112
Number of days exceeded:	State: > 0.09 parts per million	1	10	1
	Federal: > 0.08 parts per million	4	18	7
Maximum 8-hour concentration (parts per million)		0.097	0.081	0.106
Number of days exceeded:	State: > 0.07 parts per million	10	24	14
	Federal: > 0.08 parts per million	4	18	7
Coarse Particulates – Particulate Matter of 10 microns or less				
Maximum 24-hour concentration (micrograms per cubic meter)		83.0	111.1	65.6
Number of days exceeded:	State: > 50 micrograms per cubic meter	37.7	ND	36.4
	Federal: > 150 micrograms per cubic meter	0	0	0
Annual arithmetic average concentration (micrograms per cubic meter)		32	32	32
Exceeded for the year:	State: > 20 micrograms per cubic meter	Yes	Yes	Yes
	Federal: > 50 micrograms per cubic meter	No	No	No
Fine Particulates – Particulate Matter of 2.5 microns or less				
Maximum 24-hour concentration (micrograms per cubic meter)		64.0	88.3	59.3
98 th Percentile 24-hour concentration (micrograms per cubic meter)		57.4	53.9	54.5

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Pollutant	Standard	2007	2008	2009
Exceeded 98 th Percentile ¹ :	Federal: > 35 micrograms per cubic meter	Yes	Yes	Yes
State Annual Standard Design Value (micrograms per cubic meter)		16	16	16
Exceeded for the year:	State: > 12 micrograms per cubic meter	Yes	Yes	Yes
National Annual Standard Designation Value (micrograms per cubic meter)		14.6	15.3	14.7
Exceeded for the year:	Federal: > 15 micrograms per cubic meter	No	No	No
Nitrogen Dioxide				
Maximum 1-hour concentration (parts per million)		0.053	0.063	0.058
Number of days exceeded:	State: > 0.25 parts per million	0	0	0
Annual arithmetic average concentration (parts per million)		0.012	0.012	0.012
Exceeded for the year:	Federal: > 0.053 parts per million	No	No	No
Sulfur Dioxide				
Maximum 1-hour concentration (parts per million)		No Data	No Data	No Data
Number of days exceeded:	State: > 0.25 parts per million	No Data	No Data	No Data
Maximum 3-hour concentration (parts per million)		No Data	No Data	No Data
Number of days exceeded:	Federal: > 0.5 parts per million	No Data	No Data	No Data
Maximum 24-hour concentration (parts per million)		No Data	No Data	No Data
Number of days exceeded:	State: > 0.04 parts per million	No Data	No Data	No Data
	Federal: > 0.14 parts per million	No Data	No Data	No Data
Annual arithmetic average concentration (parts per million)		No Data	No Data	No Data
Exceeded for the year:	Federal: > 0.030 parts per million	No Data	No Data	No Data

Source: ARB. <http://www.arb.ca.gov/adam/welcome.html>; EPA. <http://www.epa.gov/air/data/geosel.html>. 2010.

¹ Effective December 2006, EPA tightened the PM2.5 24-hour standard from 65 to 35 µg/m³. New area designations will become effective in early 2010.

² ND = No data. There was insufficient (or no) data to determine the value. The closest SO₂ monitoring station is located in Fresno.

ppm = parts per million

µg/m³ = micrograms per cubic meter

Hot-Spot Analysis

The proposed project is within a non-attainment area for federal particulate matter 2.5-microns standards. Per 40 Code of Federal Regulations Part 93 analyses are required for conformity purposes.

Interagency Consultation, initiated November 2010, has yet to be completed. With the proposed auxiliary lanes on State Route 99 and the improvements to State Route 219 (Kiernan Avenue), Interagency Consultation will be necessary to determine whether

the State Route 99/State Route 219 (Kiernan Avenue) Interchange Reconstruction Project is a “Project of Air Quality Concern.” Interagency Consultation is required before final environmental document approval and certification. As part of this process, a public notice soliciting public comments on the project-level conformity analysis will be required. Furthermore, an Air Quality Conformity Determination is required from the Federal Highway Administration before final environmental document approval and certification.

Mobile-Source Air Toxics

In addition to the criteria air pollutants for which there are national ambient air-quality standards, the Environmental Protection Agency also regulates air toxics. Most air toxics originate from human-made sources, including on-road mobile sources, non-road mobile sources (e.g., airplanes), area sources (e.g., dry cleaners), and stationary sources (e.g., factories or refineries).

Mobile-source air toxics are a subset of the 188 air toxics defined by the Clean Air Act. Mobile-source air toxics are compounds emitted from highway vehicles and non-road equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through an engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxics also result from engine wear or from impurities in oil or gasoline.

The Environmental Protection Agency is the lead federal agency for administering the Clean Air Act and has certain responsibilities regarding the health effects of mobile-source air toxics. The Environmental Protection Agency issued a Final Rule on Controlling Emissions of Hazardous Air Pollutants from Mobile Sources (66 Federal Register 17229 [March 29, 2001]). The rule was issued under the authority in Section 202 of the Clean Air Act. In its rule, the Environmental Protection Agency examined the impacts of existing and newly announced mobile source-control programs, including the agency’s reformulated gasoline program, national low-emission vehicle standards, Tier-2 motor-vehicle emissions standards, gasoline sulfur-control requirements, proposed heavy-duty engine and vehicle standards, and on-highway diesel fuel sulfur-control requirements.

Evaluating the environmental and health impacts from mobile-source air toxics on a proposed highway project would involve several key elements, including emissions modeling, dispersion modeling to estimate ambient concentrations resulting from the estimated emissions, exposure modeling to estimate human exposure to the estimated

concentrations, and then a final determination of health impacts based on the estimated exposure. Each of these steps is hindered by technical shortcomings or uncertain science that prevents a more complete determination of the mobile source air toxics health impacts of the proposed project.

Exposure to toxics has been a focus of a number of Environmental Protection Agency efforts. Most notably, the Environmental Protection Agency conducted the National Air Toxics Assessment to evaluate modeled estimates of human exposure applicable to the county level. While not intended for use as a measure of or benchmark for local exposure, the modeled estimates in the National Air Toxics Assessment database best illustrate the levels of various toxics when totaled with national or state levels.

The Environmental Protection Agency is in the process of assessing the risks of various kinds of exposures to these pollutants. The Environmental Protection Agency Integrated Risk Information System is a database of effects to human health after exposure to various substances found in the environment (<http://www.epa.gov/iris>).

The following toxicity information for the six prioritized mobile source air toxics was taken from the Integrated Risk Information System database and Weight of Evidence Characterization summaries. This information, from the Environmental Protection Agency's Integrated Risk Information System database, represents the Environmental Protection Agency's most current evaluations of the potential hazards and toxicology of these chemicals or mixtures.

- Benzene is characterized as a known human carcinogen (cancer causing).
- The potential carcinogenicity of acrolein cannot be determined because the existing data are inadequate for an assessment of human carcinogenic potential for either the oral or inhalation route of exposure.
- Formaldehyde is a probable human carcinogen, based on limited evidence in humans and sufficient evidence in animals.
- 1,3-butadiene is characterized as carcinogenic to humans by inhalation.
- Acetaldehyde is a probable human carcinogen based on increased incidence of nasal tumors in male and female rats and laryngeal (throat) tumors in male and female hamsters after inhalation exposure.
- Diesel exhaust is likely to be carcinogenic to humans by inhalation from environmental exposures. Diesel exhaust is the combination of diesel particulate matter and diesel-exhaust organic gases.

- Diesel exhaust also represents chronic respiratory effects, possibly the primary non-cancer hazard from mobile-source air toxics. Prolonged exposures to diesel exhaust may impair pulmonary (lung) function and could produce symptoms such as cough, phlegm, and chronic bronchitis. Exposure relationships have not been developed from these studies.

Because of the uncertainties outlined above, a quantitative assessment of the effects of air toxic-emissions impacts on human health cannot be made at the project level. While available tools do allow reasonable prediction of relative emission changes between alternatives for larger projects, the amount of mobile-source air-toxics emissions from the project alternatives and mobile-source air-toxics concentrations or exposures created by each project alternative cannot be predicted with sufficient accuracy to be useful in estimating health impacts. The relevance of the unavailable or incomplete information makes it impossible to make a determination of whether any of the alternatives would have great adverse impacts on the human environment.

Environmental Consequences

Carbon Monoxide Hot-Spots

Caltrans has developed a Transportation Project-Level Carbon Monoxide Protocol for assessing carbon monoxide impacts of transportation projects. The procedures and guidelines comply with the following regulations without imposing additional requirements: Section 176(c) of the 1990 CAA Amendments, federal conformity rules, state and local adoptions of the federal conformity rules, the National Environmental Policy Act, and the California Environmental Quality Act requirements (California Code of Regulations Title 21 Section 1509.3[25]).

Two conformity-requirement decision flow charts are provided in the Transportation Project-Level Carbon Monoxide Protocol. A summary discussion (as identified in Figure 1) of the Transportation Project-Level Carbon Monoxide Protocol used to determine the conformity requirements that apply to new projects is provided below:

- The proposed project is not exempt for emissions analyses or regional analysis based on the guidelines. The project is defined as regionally significant. Based on these facts an assessment of local impacts was conducted which shows that the project does not worsen air quality because it does not significantly increase the percentage of vehicles operating in cold start mode by more than 5 percent.

- Additionally, traffic volumes on Kiernan Avenue do not change as a result of the project. The proposed project is an interchange reconstruction project that also does not increase the capacity or average daily traffic of State Route 99. Also, there is no reduction in average speeds. The project alternatives generally increase average speeds and reduce delay.

Average Daily Traffic on State Route 219 (Kiernan Avenue)

Model Year	Without Project	With Project	Project Related Increase in ADT	Percent Increase
2015	41,129	41,129	N/A	N/A
2035	57,515	57,515	N/A	N/A

Source: State Route 99/State Route 219 Interchange Reconstruction Project Air Quality Conformity Study, July 2010.

- Furthermore, the project improves traffic flow. For uninterrupted roadway segments, higher average speeds (up to 50 miles-per-hour) should be regarded as an improvement in traffic flow. For intersection segments, higher average speeds and a decrease in average delay traffic should be considered an improvement in traffic flow.
- Lastly, as shown in the July 2010 Air Quality Analysis completed for the project, the project would improve the traffic flow by improving the level of service (LOS) at key intersections in the project area. In addition, hours of system-wide delay are significantly reduced with both Alternatives 1 and 2 compared to the No Build scenario.

Based on the above criteria, the carbon dioxide Transportation Project-Level Carbon Monoxide Protocol indicates that further analysis is not necessary. Therefore, a detailed hotspot analysis is not required.

Short-Term Construction Impacts

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

Construction is anticipated to be completed by 2015. The San Joaquin Valley Air Pollution Control District does not provide a model for calculating construction

emissions. Construction emissions, however, were estimated for the project using the Sacramento Metropolitan Air Quality Management District’s Road Construction Emissions Model, Version 6.3.2, which can also be used for projects in the San Joaquin Valley. Construction-related emissions are presented in Table 2.21. The emissions presented below are based on the best information available at the time of calculations and assume that the schedule for all improvements is anticipated to begin in 2013. Default equipment assumptions for the Road Construction Emissions Model were used in developing the emissions estimates. The estimates can be refined once final engineering has been completed for the project. As building the project is expected to take less than five years, construction-related emissions were not considered in the conformity analysis.

Table 2.21 Project Construction Emissions

Project Phases	ROG (lbs/day)	CO (lbs/day)	NO_x (lbs/day)	Total PM₁₀ (lbs/day)	Exhaust PM₁₀ (lbs/day)	Fugitive Dust PM₁₀ (lbs/day)
Grubbing/Land Clearing	3.6	15.1	29.0	6.2	1.2	5.0
Grading/Excavation	4.6	20.5	36.5	6.7	1.7	5.0
Drainage/Utilities/Sub-Grade	3.5	14.9	26.5	6.4	1.4	5.0
Paving	2.2	8.9	12.4	1.1	1.1	-
Maximum (pounds/day)	4.6	20.5	36.5	6.7	1.7	5.0
Total (tons/construction project)	0.5	2.2	3.8	0.8	0.2	0.6
Recommended thresholds	10	10	10	15	15	15

Source: State Route 99/State Route 219 Interchange Reconstruction Project Air Quality Study, July 2010.

ROG=reactive organic gases (pounds per day)

CO=carbon monoxide (pounds per day)

NO_x=nitrogen oxides (pounds per day)

PM₁₀=particulate matter, 10 micron diameter (pounds per day)

As noted in the table, construction emissions would not exceed the recommended thresholds.

Site preparation and roadway construction would involve clearing, cut-and-fill activities, grading, removing or improving existing roadways, and paving roadway surfaces. Construction-related effects on air quality from most highway projects would be greatest during the site preparation phase because most engine emissions are associated with the excavation, handling, and transport of soils to and from the site. If not properly controlled, these activities would temporarily generate particulate matter of 2.5 microns or less and 10 microns or less in diameter, and small amounts of carbon monoxide, sulfur dioxide, nitrogen oxides, and volatile organic compounds.

Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site would deposit mud on local streets, which could be an additional source of airborne dust after the mud dries. Particulate matter emissions of 10 microns or less would vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. Particulate matter emissions of 10 microns or less would depend on soil moisture, silt content of the soil, wind speed, and the number of equipment being operated. Larger dust particles would settle near the source, while finer particles would be dispersed over greater distances from the construction site.

Long-Term Impacts

The proposed project is locally defined as regionally important because the project would increase the number of lanes on State Route 219 (Kiernan Avenue). The project is a regionally important project in the Stanislaus Council of Governments Air Quality Conformity Analysis for the 2011 Regional Transportation Plan.

The project, however, is not considered a source for increased air pollution, meeting the conditions set forth in the above discussion.

Mobile-Source Air Toxics

The proposed project would reduce delay and either improve the level-of-service or maintain the level-of-service at the same level as without the project. For this reason, due to improved level-of-service, mobile-source air toxics are expected to be similar or lower than emissions in the study area, relative to the No-Build Alternative (see Table 2.22). On a regional basis, the Environmental Protection Agency’s vehicle and fuel regulations, coupled with fleet turnover, would, over time, cause substantial reductions in mobile-source air-toxics levels.

Table 2.22 Mobile-Source Air-Toxics Peak-Hour Emissions

	Existing	2035 No-Build Alternative	2035 Alternative 1	2035 Alternative 2
Diesel PM	207.2 grams	121.3 grams	71.6 grams	74.9 grams
Formaldehyde	84.5 grams	65.5 grams	43.9 grams	45.9 grams
1,3-Butadiene	9.1 grams	4.2 grams	4.4 grams	4.6 grams
Benzene	52.1 grams	27.2 grams	26.3 grams	27.5 grams
Acrolein	1.9 grams	0.8 grams	0.9 grams	1.0 grams
Acetaldehyde	35.6 grams	30.0 grams	18.8 grams	19.7 grams

Source: State Route 99/State Route 219 Interchange Reconstruction Project Air Quality Study, July 2010.

Avoidance, Minimization, and/or Mitigation Measures

Construction Impacts

Compliance with Caltrans' Dust Control Plan would minimize effects to air quality from construction emissions:

- The construction contractor, to reduce fugitive-dust emissions, would adhere to the requirements of San Joaquin Valley Air Pollution Control District Regulation VIII.
- The construction contractor should comply with Caltrans' Standard Specifications Section 7-1.01F and Section 10 of Caltrans' Standard Specifications.
- The construction contractor should comply with San Joaquin Valley Air Pollution Control District Rule 9510 and submit an air-impact assessment application if it is determined that the construction-related emissions exceed the established thresholds.
- The construction contractor should limit traffic speeds on unpaved roads to 15 miles per hour.
- The construction contractor should install sandbags or other erosion-control measures to prevent silt runoff to public roadways from sites with a slope greater than 1 percent.
- The construction contractor should install wheel washers for all exiting trucks, or wash-off all trucks and equipment leaving the site.
- The construction contractor should install windbreaks at windward side(s) of the construction area.
- The construction contractor should suspend excavation and grading activity when winds exceed 20 miles per hour. (Regardless of wind speed, an owner/operator must comply with Regulation VIII's 20 percent opacity limitation.)
- The construction contractor should limit area excavation, grading, and other construction activity at any one time.
- The construction contractor should properly and routinely maintain all construction equipment as recommended by the manufacturer manuals to control exhaust emissions.
- The construction contractor, to reduce emissions associated with idling engines, should shut down equipment not in use for extended periods.

Long-term Impacts

There are no mitigation measures required, as the build alternatives would not result in substantial long-term air-quality impacts.

2.2.5 Noise and Vibration

Regulatory Setting

The National Environmental Policy Act of 1969 and the California Environmental Quality Act provide the broad basis for analyzing and abating the effects of highway traffic noise. 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 National Environmental Policy Act and the California Environmental Quality Act.

California Environmental Quality Act

The California Environmental Quality Act requires a strictly no-build versus build analysis to assess whether a proposed project would have a noise impact. If a proposed project is determined to have a major noise impact under the California Environmental Quality Act, then the act dictates that mitigation measures must be incorporated into the project unless such measures are not feasible. The rest of this section will focus on the National Environmental Policy Act and 23 Code of Federal Regulations 772, noise analysis. Please see Chapter 3 for further information on noise analysis under the California Environmental Quality Act.

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 criterion for residences (67 decibels) is lower than the criterion for commercial areas (72 decibels).

Table 2.23 lists the noise-abatement criteria for use in the National Environmental Policy Act and 23 Code of Federal Regulations 772 analyses. Table 2.24 shows the noise levels of typical activities.

Table 2.23 Activity Categories and Noise-Abatement Criteria

Activity Category	Noise-Abatement Criteria, A-weighted Noise (dBA) Level	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	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums

Source: Caltrans Traffic Noise Analysis Manual, 1998

A-weighted decibels are adjusted to approximate the way humans perceive sound. Equivalent Continuous Noise Level is the steady A-weighted level that is equivalent to the same amount of energy as that contained in the actual time-varying levels over 1 hour.

Table 2.24 Typical Noise Levels

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	40	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime		Library
Quiet Rural Nighttime	30	Bedroom at Night, Concert Hall (Background)
	20	Broadcast/Recording Studio
	10	
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

In accordance with Caltrans' Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects, October 1998, a noise impact occurs when the future noise level with the project results in a substantial increase in noise level (defined as a 12-decibel or more increase), or when the future noise level with the project approaches or exceeds the noise-abatement criteria. Approaching the noise abatement-criteria is defined as within 1 decibel of the noise-abatement criteria.

If it is determined that the project would 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 into 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-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. The following factors are used to determine whether a proposed noise-abatement measure is reasonable: residents' acceptance; the absolute noise level; build alternative versus existing noise; environmental effects of noise abatement; public and local agency input; newly constructed development versus development pre-dating 1978; and the cost per benefited residence.

Caltrans would also be required to consider the conclusions in the Noise Abatement Decision Report. The report compares the noise-abatement benefits with the various social and environmental issues created by the project and the abatement.

Affected Environment

The following analysis is based on the Noise Study Report completed in March 2010 and the Noise Abatement Decision Report completed in October 2010.

The existing noise environment in the project area is dominated by traffic noise from vehicular traffic on State Route 99. Noise monitors were placed in strategic locations around the project area to obtain the existing noise levels. The results indicated that existing ambient-noise levels at modeled sensitive receptors along the project alignment range from 69.6 dBA L_{eq} to 77.6 dBA L_{eq} . Land uses were also assessed to identify where noise impacts would potentially occur. Single-family and hotel residences in the project area were identified and classified under activity-category B, with a noise-abatement criteria of 67 decibels for exterior areas. Existing commercial and industrial areas in the project area were identified as activity-category C uses with a noise-abatement criteria of 72 decibels for exterior areas. For the purposes of the noise study, sensitive receptors were numbered R1 through R33. No soundwalls currently exist along the project site.

Environmental Consequences National Environmental Policy Act

Noise levels for the existing conditions, No-Build Alternative, build alternatives, and attenuation levels are presented in Tables 2.25 and 2.26 as prescribed under 23 Code of Federal Regulations 772 and the Traffic Noise Analysis Protocol. To meet the 20-year planning horizon required to show noise levels 20 years after construction, project noise levels were calculated for 2035.

Some noise-level increase from the corresponding existing noise level would result from operation of the completed project. Of the 33 receptor locations that were modeled in the project area, 10 receptors, by 2035, would approach or exceed the noise-abatement criteria for build-alternative traffic conditions. Noise abatement measures, therefore, must be considered.

Soundwalls were studied for each affected sensitive-receptor location. At each location, six soundwall heights were analyzed: 6, 8, 10, 12, 14 and 16 feet. A minimum noise reduction of 5 dBA must be achieved at the affected receivers for the proposed noise-abatement measure to be considered feasible. Table 2.26 shows the soundwall heights required to achieve the 5-dBA reduction that complies with Section 3 of the noise protocol.

Table 2.25 Predicted Traffic Noise Levels (dBA L_{eq})

Receptor I.D.	Location	Type of Land Use	NAC	Existing Noise Level	Future (2035) No-Build Noise Levels	Alt 1 (2035) Noise Levels	Change from Existing Level	Change from No-Build Level	Alt 2 (2035) Noise Levels	Change from Existing Level	Change from No-Build Level
R1	4300 Bangs Avenue	Hotel	B(67)	64	65	65	1	0	65	1	0
R2	Hope Lane	Residential	B(67)	74 ¹	74	75	1	1	75	1	1
R3	Salida Boulevard	Residential	B(67)	69	70	71	2	1	70	1	0
R4	4730 Salida Boulevard	Hotel	B(67)	60	62	62	2	0	65	5	3
R5	4921 Sisk Road	Hotel	B(67)	60	61	61	1	0	60	0	-1
R6	4909 Sisk Road	Hotel	B(67)	63	65	64	1	-1	64	1	-1
R7	Trowbridge Lane	Residential	B(67)	64	66	68	4	2	68	4	2
R8	Trowbridge Lane	Residential	B(67)	65	65	66	1	1	66	1	1
R9	Trowbridge Lane	Residential	B(67)	65	65	65	0	0	65	0	0
R10	Trowbridge Lane	Residential	B(67)	65	65	65	0	0	65	0	0
R11	Trowbridge Lane	Residential	B(67)	65	65	66	1	1	66	1	1
R12	Tamara Way	Residential	B(67)	68	68	68	0	0	69	1	1
R13	Tamara Way	Residential	B(67)	69	69	70	1	1	70	1	1
R14	Kimberly Court	Residential	B(67)	63	63	63	0	0	63	0	0
R15	Kimberly Court	Residential	B(67)	63	64	64	1	0	64	1	0
R16	Littleton Way	Residential	B(67)	60	61	61	1	0	61	1	0
R17	Littleton Way	Residential	B(67)	60	61	61	1	0	61	1	0
R18	Littleton Way	Residential	B(67)	60	60	60	0	0	60	0	0
R19	Littleton Way	Residential	B(67)	58	58	59	1	1	58	0	0
R20	Littleton Way	Residential	B(67)	58	59	59	1	0	59	1	0
R21	Littleton Way	Residential	B(67)	61	61	61	0	0	61	0	0
R22	Littleton Way	Residential	B(67)	59	60	60	1	0	60	1	0
R23	Avante Lane	Residential	B(67)	60	61	61	1	0	61	1	0
R24	Cimarron Court	Residential	B(67)	61	61	61	0	0	61	0	0
R25	Kimberly Court	Residential	B(67)	65	65	66	1	1	66	1	1
R26	Tamara Way	Residential	B(67)	63	64	64	1	0	64	1	0
R27	Durley Drive	Residential	B(67)	61	62	62	1	0	63	2	1
R28	Trowbridge Lane	Residential	B(67)	61	62	62	1	0	62	1	0
R29	Trowbridge Lane	Residential	B(67)	60	62	62	2	0	62	2	0
R30	Trowbridge Lane	Residential	B(67)	61	63	63	2	0	63	2	0
R31	Trowbridge Lane	Residential	B(67)	62	64	65	3	1	65	3	1
R32	Aylesbury Way	Residential	B(67)	67	71	72	5	1	72	5	1
R33	Wessex Lane	Residential	B(67)	67	70	70	3	0	69	2	-1

Source: Kiernan Avenue State Route 219/State Route 99 Interchange Reconstruction Project Noise Study Report, 2010.

¹ Numbers in **bold** indicate noise levels that approach or exceed the NAC. dBA = A-weighted decibel L_{eq} = Equivalent Sound Level NAC = Noise-Abatement Criteria

Table 2.26 Summary of Abatement Information

Barrier	Height (feet)	Acoustically Feasible? Yes/No	Number of Benefited Residences	Total Reasonable Allowance (\$)	Estimated Construction Cost (\$)	Reasonable? Yes/No
Alternative 1						
SB1	6	Yes	3	105,000	290,640	No
	8	Yes	3	105,000	387,520	No
	10	Yes	3	111,000	484,400	No
	12	Yes	3	117,000	581,280	No
	14	Yes	3	117,000	678,160	No
	16	Yes	3	117,000	775,040	No
SB2	16	Yes	3	99,000	961,920	No
SB3	8	Yes	5	185,000	308,800	No
	10	Yes	10	390,000	386,000	Yes
	12	Yes	13	507,000	463,200	Yes
	14	Yes	13	507,000	540,400	No
	16	Yes	19	779,000	617,600	Yes
Alternative 2						
SB1	10	Yes	1	37,000	523,200	No
	12	Yes	1	39,000	627,840	No
	14	Yes	1	39,000	732,480	No
	16	Yes	3	117,000	837,120	No
SB2	16	Yes	3	99,000	961,920	No
SB3	8	Yes	3	111,000	308,800	No
	10	Yes	10	390,000	386,000	Yes
	12	Yes	13	507,000	463,200	Yes
	14	Yes	13	507,000	540,000	No
	16	Yes	13	533,000	617,600	No

SB=sound barrier (soundwall)

Construction Noise

Two types of short-term noise impacts would occur during project construction: noise from construction crew commutes to and from the site and noise from the construction work itself.

The noise from construction-crew commutes and the transport of construction equipment and materials to the project site would incrementally raise noise levels on access roads leading to the site. Heavy equipment for grading and construction activities would be moved to the site, remain for the duration of each construction phase, and not add to the daily traffic volume in the project vicinity. A high single-event noise-exposure potential at a maximum level of 87 dBA L_{max} from trucks passing within 50 feet would also exist. However, the projected construction traffic would be minimal when compared to existing traffic volumes on State Route 99 and other affected streets, meaning the project’s associated long-term noise-level change

would not be perceptible. Therefore, short-term construction-related worker commutes and equipment-transport noise would be less than substantial.

Noise is generated during excavation, grading, and roadway construction. Construction is performed in discrete steps, each of which has its own mix of equipment and, consequently, its own noise characteristics. These various sequential phases would change the character of the noise generated and, therefore, the noise levels along the project alignment as construction progresses. Despite the variety in the type and size of construction equipment, similarities in the dominant noise sources and patterns of operation allow construction-related noise ranges to be categorized by work phase.

The closest noise sensitive receptors to roadway-improvement construction areas would be the residential land uses on Aylesbury Way, represented by modeled receptor locations R7, R32, and R33. These land uses are located within 50 feet of potential construction areas. Therefore, these sensitive receptor locations may be subject to short-term noise reaching 91 dBA, the maximum sound level generated by construction activities along the project alignment.

Environmental Consequences California Environmental Quality Act Noise Analysis

When determining whether a noise impact is significant under the California Environmental Quality Act, comparison is made between the predicted noise levels of the no-build and the build alternatives. The California Environmental Quality Act noise analysis is completely independent of the analysis required under National Environmental Policy Act and 23 Code of Federal Regulations 772, which determines impacts based on whether the predicted traffic noise level with the project “approach or exceed” the noise abatement criteria, or if the predicted traffic noise level is 12 A-weighted decibels or more higher than the corresponding existing modeled noise level at a sensitive receptor. Under California Environmental Quality Act, the assessment entails looking at the setting of the noise impact and then how large or perceptible any noise increase would be in the given area.

The noise analysis for the proposed project was prepared according to the Caltrans Traffic Noise Analysis Protocol. According to the noise analysis 29 sensitive noise receptors were identified within the project limits.

None of the sensitive noise receptors identified for the project were predicted to have a noise increase of 12 decibels or more, therefore; construction of the proposed

project would not result in a significant noise impact under the California Environmental Quality Act.

Avoidance, Minimization, and/or Noise Abatement Measures National Environmental Policy Act

The reasonableness of a soundwall was determined by comparing the estimated cost of building the soundwall against the total reasonable allowance. The total reasonable allowance was determined based on the number of benefited residences multiplied by the reasonable allowance per residence. Construction-cost estimates were based on standard masonry block construction. If the estimated soundwall construction cost exceeded the total reasonable allowance, the soundwall was determined not to be reasonable. However, if the estimated soundwall construction cost was within the total reasonable allowance, the soundwall was determined to be reasonable.

Based on completed studies, Caltrans intends to reduce noise by placing soundwalls at locations shown in Figures 2-3a, 2-3b, 2-4a, and 2-4b. Soundwall lengths and average heights are shown in Table 2.25. Preliminary design data indicate that soundwalls would reduce noise levels by 5 dBA for residences. Costs for soundwalls are shown in Table 2.26. If during final design, conditions substantially change, noise reduction efforts may not be necessary. The final decision for noise abatement would be made upon completion of the project design and the public involvement processes.



SOURCE: Kiernan Avenue/State Route 99 Interchange Reconstruction NSR, 2010

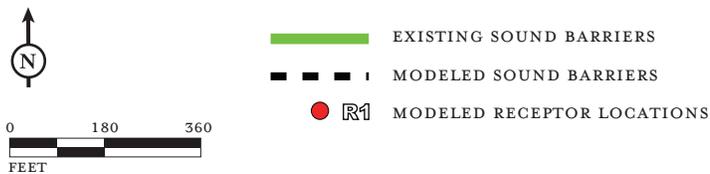
Figure 2.3a

Alternative 1 Modeled Sound Barrier and Receptor Locations

EA # 10-0L330

10-STA-99-PM R21.9/R23.1

10-STA-219-PM 0.0/0.3





SOURCE: Kiernan Avenue/State Route 99 Interchange Reconstruction NSR, 2010

Figure 2.3b

Alternative 1 Modeled Sound Barrier and Receptor Locations

EA # 10-0L330

10-STA-99-PM R21.9/R23.1

10-STA-219-PM 0.0/0.3



- EXISTING SOUND BARRIERS
- MODELED SOUND BARRIERS
- R1 MODELED RECEPTOR LOCATIONS





SOURCE: Kiernan Avenue/State Route 99 Interchange Reconstruction NSR, 2010

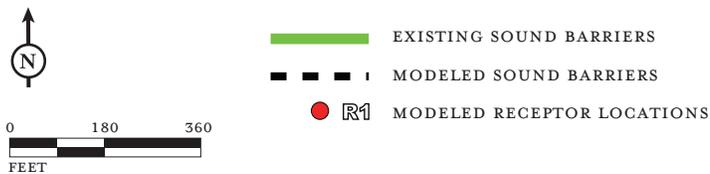
Figure 2.4a

Alternative 2 Modeled Sound Barrier and Receptor Locations

EA # 10-0L330

10-STA-99-PM R21.9/R23.1

10-STA-219-PM 0.0/0.3





SOURCE: Kiernan Avenue/State Route 99 Interchange Reconstruction NSR, 2010

Figure 2.4b

Alternative 2 Modeled Sound Barrier and Receptor Locations

EA # 10-0L330

10-STA-99-PM R21.9/R23.1

10-STA-219-PM 0.0/0.3



- EXISTING SOUND BARRIERS
- MODELED SOUND BARRIERS
- **R1** MODELED RECEPTOR LOCATIONS

- **Alt1 SB3.** This sound barrier (soundwall) was analyzed for Alternative 1 and would be located along the southern property line of the residential properties that border Kiernan Court. This sound barrier would also wrap around to the north along the eastern property line of the residential properties would, with implementation of the project, border Sisk Road. This sound barrier is modeled to protect the existing residential properties represented by receptors R7, R8, R31, R32, and R33.
- **Alt2 SB3.** This sound barrier (soundwall) was analyzed for Alternative 2 and would be built along the northwest project limits that borders Kiernan Court, State Route 219 (Kiernan Avenue), and Sisk Road. This sound barrier is modeled to protect the existing residential properties represented by receptors R7, R8, R32, and R33.

Secondary Impacts of Abatement Measures

Based on the analysis of the Noise Abatement Decision Report, all secondary effects of implementation, including biological impacts, water quality, visual impacts, hazardous waste, and cultural resources impacts of the recommended abatement measures were determined to be not substantial. Therefore, no adverse secondary effects are anticipated from the construction of soundwalls as part of the proposed project.

Construction Noise Abatement

During construction of the project, noise from building activities may intermittently be heard in the area. Construction equipment can generate noise levels ranging from 70 to 90 decibels at a distance of 50 feet. Noise produced by construction equipment would be reduced over distance at a rate of about 6 decibels per doubling of distance.

Construction noise is regulated by Caltrans Standard Specifications Section 7-1.0011, “Sound Control Requirements,” which states that noise levels generated during building would comply with applicable local, state, and federal regulations, and that all equipment would be fitted with adequate mufflers according to the manufacturer’s specifications.

No adverse noise effects from construction are anticipated because construction would be done in accordance with Caltrans Standard Specifications Section 7-1.011 and applicable local noise standards. Construction noise would be short-term, intermittent, and overshadowed by local traffic noise. Further, implementing the following measures would minimize the temporary noise effects during building activities:

- All equipment would have sound-control devices that are no less effective than those provided on the original equipment. No equipment would have an unmuffled exhaust.
- As directed by Caltrans, the contractor would 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.

Avoidance, Minimization, and/or Noise Abatement Measures California Environmental Quality Act

There are no school classrooms located in the project vicinity. Therefore, the noise abatement criteria do not apply under California Environmental Quality Act impact determination.

2.3 Biological Environment

2.3.1 Animal Species

This section discusses potential impacts and permit requirements associated with wildlife 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 2.3.5. 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 the U.S. Fish and Wildlife Service or National Oceanic and Atmospheric Fisheries Service candidate species.

Regulatory Setting

Federal laws and regulations pertaining to wildlife include the following:

- National Environmental Policy Act
- Migratory Bird Treaty Act
- Fish and Wildlife Coordination Act
- State laws and regulations pertaining to wildlife include the following:
- California Environmental Quality Act
- Sections 1600–1603 of the Fish and Game Code
- Section 4150 and 4152 of the Fish and Game Code

Affected Environment

A Natural Environment Study (Minimal Impacts) was completed for the project in November 2010.

The majority of the project study area consists of disturbed/ruderal (weedy) and developed areas that generally do not provide high-quality habitat for resident wildlife species. However, some species do inhabit these communities. A small amount of agricultural land, comprised of orchards and row/field crops, also exists within the biological study area. The following species are potentially present in the project study area.

Nesting Birds

The nests of all native bird species are protected under the federal Migratory Bird Treaty Act and California Fish and Game Code. The white-tailed kite (*Elanus leucurus*) is a state fully-protected species with potential to occur in the biological study area. White-tailed kites nest and forage in various habitats associated with oak savannah, annual grasslands, and agricultural lands. White-tailed kites typically build stick nests in the tops of trees near foraging grounds. They forage for small rodents over grassland and open savanna and are commonly observed foraging along freeway medians and edges.

Bats

Some special status bats may occur in the biological study area. Greater western mastiff bats (*Eumops perotis californicus*) and pallid bats (*Antrozous pallidus*) are both California species of special concern.

Bats are nocturnal and are found in a variety of habitats. Many species forage for insects over water, shrubs, or meadows. Some species have separate roosts for day, night, maternal, and hibernation use. Other species may use the same roost for more than one purpose. Bats roost in a variety of crevices, cavities, and protected sites. Roosting sites may include bridges, buildings, caves, and trees.

Greater western mastiff bats, feeding primarily on moths, are found in broad, open areas in a variety of habitats such as deserts, flood plains, chaparral, open forests, grasslands, and agricultural areas. Roosts are high above the ground, allowing a clear drop of about nine feet. Cliffs are the preferred roost site, though crevices in boulders and buildings are also used.

Pallid bats use a variety of habitats at low elevations. They often forage on the ground while preying on large insects and spiders. Caves, crevices, hollow trees and buildings are used for day roosts. Night roosts may be in more open sites.

Burrowing Owl

There are records of burrowing owl (*Athene cunicularia*) in Stanislaus County within 10 miles of the biological study area. Though it has no federal status, the burrowing owl is a California species of concern.

Burrowing owls occur in warmer valleys; open, dry grasslands; deserts; and scrublands that support populations of California ground squirrels. Burrowing owls nest below ground, using the abandoned burrows of other species, most commonly ground squirrel burrows, and feed on insects and small mammals.

Habitat

The agricultural land (orchard and row/field crops) in the biological study area provides foraging habitat for migratory birds. Permanent impacts would occur to the plant communities eaten by migratory birds.

Environmental Consequences

Nesting Birds

If construction occurs during the breeding season (i.e., February 28 through October 1), construction activities could directly affect nesting birds by removing trees that support active nests. Prolonged loud-construction noise could also disturb nesting birds, resulting in nesting failure in trees that are not removed.

Bats

Some bats forage widely and there is potential for bats to pass through the biological study area as they hunt. Construction activities could temporarily affect bats foraging in the biological study area. Though bats may occasionally forage in the biological study area, it is not unique or important habitat for bats. The biological study area does not provide suitable roosting habitat for bats, nor was any bat sign (e.g., feces, urine staining) present under the overcrossing. Better foraging habitat is available over nearby fields, canals, and the Stanislaus River. The project, therefore, will not affect roosting bats.

Burrowing Owl

No mammal burrows are present in the biological study area. The vegetation is mainly ornamental and unsuitable; areas free of ornamental vegetation are highly disturbed and managed for weed control. There is no habitat for, or signs of,

burrowing owls in the project area. It is highly unlikely that this species would occur in the project area.

Avoidance, Minimization, and/or Mitigation Measures

Nesting Birds

- All clearing and grubbing should be done during the non-nesting season (between October 1 and February 28). If this is not possible, a qualified biologist should do a survey for nesting birds in the biological study area. The survey must take place a maximum of 14 days prior to the start of construction. If nesting birds are found within the biological study area, a setback of 100 feet from nesting areas shall be established and maintained during the nesting season. This setback applies whenever construction or other ground disturbing activities must begin during the nesting season in the presence of nests which are known to be occupied. Setbacks shall be marked by brightly colored temporary fencing and maintained until construction is complete or the young have fledged, as determined by a qualified biologist.

Alternatively, the setback (if required) may be reduced if a qualified biologist is present to monitor the nest(s) when construction begins. If the biologist determines nesting is not affected by construction activities with the reduced setback, work can proceed. If it is determined that construction activities are adversely affecting the nesting birds with the reduced setback, all construction within 100 feet of a nest shall be halted until the biologist can establish an appropriate setback.

With the implementation of the minimization measures described above, such as preconstruction surveys and buffers, impacts to nesting birds would be avoided.

2.3.2 Invasive Species

Regulatory Setting

On February 3, 1999, President 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 on August 10, 1999 directs the use of the state’s noxious-weed list to

define the invasive plants that must be considered as part of the Environmental Protection Agency analysis for a proposed project.

Affected Environment

A Natural Environment Study (Minimal Impact) was completed for the project in November 2010. Several areas within the State Route 99/State Route 219 (Kiernan Avenue) interchange are dominated by nonnative annual grasses and ruderal (weedy) forbs and are more open than nearby areas planted with ornamentals. Dominant grass species include rye, barley, black mustard, bromes, yellow star thistle, and wild oats.

Environmental Consequences

Vegetation in the biological study area is highly disturbed and it is highly unlikely that project-related activities would further degrade the vegetative composition in the biological study area. However, construction-related activities would potentially promote the distribution of invasive plant species to off-site areas through ground disturbance and movement of earthmoving equipment.

Avoidance, Minimization, and/or Mitigation Measures

To avoid the distribution of invasive species to off-site areas during project construction, contract specifications should include, at a minimum, the following measures:

- All earthmoving equipment to be used during project construction should be thoroughly cleaned before arriving on the project site.
- All seeding equipment such as hydro-seed trucks should be thoroughly rinsed at least three times prior to arriving at the project site and the beginning of seeding work.
- To avoid spreading any nonnative invasive species already existing on-site to off-site areas, all equipment should be thoroughly cleaned before leaving the site.

In compliance with Executive Order 13112 on invasive species, 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 would be taken if invasive species were found in or adjacent to the construction areas. Precautions include the inspection and cleaning of construction equipment. Eradication strategies would be used should an invasive species be discovered.

2.4 Cumulative Impacts

Cumulative impacts 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 impacts that individually are minor but collectively can create 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 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. Land-use activities can also contribute to potential community impacts 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.

Impacts to project-specific resources have been discussed throughout this chapter. Section 2.1 (Human Environment) described potential environmental impacts in land use, growth, farmlands/timberlands, community impacts, utilities, and transportation. Section 2.2 (Physical Environmental) addressed potential impacts to visual/aesthetics, cultural resources, hydrology and floodplains, water quality, geology, paleontology, hazardous materials, air quality, and noise. Section 2.3 (Biological Environment) described potential impacts to natural communities, wetlands, plant species, animal species, threatened and endangered species, and invasive species.

Based on these analyses, it was determined that the following resources may be cumulatively affected by the proposed project:

- Farmlands/Timberlands
- Visual/Aesthetics
- Water Quality
- Air Quality
- Noise

Global climate change was not included in this cumulative analysis. Climate change is, by its very nature, a cumulative impact and is discussed separately in Section 2.5.

Affected Environment

Table 2.27 explains each of the above resources and the area studied for the purpose of the cumulative impact analysis.

Table 2.27 Resource Area Considered for Cumulative-Impact Analysis

Resource	Area Studied
Farmlands/Timberlands	State Route 219 (Kiernan Avenue) corridor (and adjacent developments) from Salida Road to Sisk Road, as well as the State Route 99 corridor near State Route 219 (Kiernan Avenue)
Visual/Aesthetics	State Route 219 (Kiernan Avenue) corridor (and adjacent developments) from Salida Road to Sisk Road, as well as the State Route 99 corridor near State Route 219 (Kiernan Avenue)
Water Quality	Middle San Joaquin River Watershed
Air Quality	San Joaquin Valley Air Pollution Control District regulatory boundary
Noise	State Route 219 (Kiernan Avenue) corridor (and adjacent developments) from Salida Road to Sisk Road

Table 2.28 summarizes the proposed development that may contribute to cumulative impacts for the proposed project. This table includes recently built projects and reasonably foreseeable future projects that would potentially affect the same resources as the proposed project. This list was compiled from various sources, including the 2011 Regional Transportation Plan, Stanislaus County Planning Department, and local knowledge of the project area.

To be considered for inclusion into Table 2.28, projects must be “reasonably foreseeable.” Although there is no uniform established standard, projects would be considered “reasonably foreseeable” if they met the following criteria:

- Have applications pending with a government agency
- Are included in an agency’s budget or capital improvement program
- Are foreseeable future phases of existing projects

Table 2.28 Projects Evaluated for Cumulative-Impact Analysis

Project	Location	Project Description	Percent Built
Hammett Road Interchange Widening/Reconstruction	Stanislaus County	Widen from 4 to 6 lanes	0% Built
State Route 219 (Kiernan Avenue) from State Route 99 to Stoddard Road	Stanislaus County	Widen from 4 to 6 lanes	0% Built
Sisk Road from State Route 219 (Kiernan Avenue) to Pirrone Road	Stanislaus County	Widen from 2 to 4 lanes	0% Built
Sisk Road from Pelandale Avenue to State Route 219 (Kiernan Avenue)	Stanislaus County	Widen from 2 to 4 lanes	0% Built
Stoddard Road from State Route 219 (Kiernan Avenue) to Ladd Road	Stanislaus County	Widen from 2 to 4 lanes	0% Built

Environmental Consequences

Farmlands/Timberlands

Developments adjacent to the proposed project from Sisk Road to Salida Boulevard, as well as the State Route 99 corridor, were used to evaluate the potential for substantial cumulative effects. The farmland impact analysis concluded that the proposed project would result in no substantial effects, under the California Environmental Quality Act, to prime farmland or farmland of statewide importance or regional importance. In addition, no impacts to any property held under a Williamson Act contract were found. As such, the proposed project would not, cumulatively, affect farmlands.

Visual/Aesthetics

Developments next to the proposed project from Sisk Road to Salida Boulevard, as well as the State Route 99 corridor, were used to evaluate the potential for substantial cumulative effects. The proposed project would not substantially degrade the total visual experience for the highway user along the route. The regional landscape currently consists of an urbanized environment with similar features to those proposed for the project. Additionally, the proposed improvements are added to an already-existing interchange infrastructure. Though the existing view quality would be affected by this change, the view would not be substantially degraded by the

proposed project. With mitigation measures, the proposed project would not, cumulatively, affect visual/aesthetic resources.

Water Quality

The San Joaquin River watershed was used as the study area for the cumulative water-quality impact analysis. The water-quality impact analysis concluded that the proposed project would not substantially affect water quality. All projects listed in Table 2.26 have the potential to affect water quality both on a temporary basis during construction and on a permanent basis. The addition of impervious surfaces (pavement) introduced by most of those projects would increase the amount of storm-water runoff as well as introduce new sources of pollutants. The pollutants, if transported to surface water bodies, could degrade water quality. With mitigation measures, the proposed project would not, cumulatively, affect water quality.

Air Quality

Developments within the jurisdiction of the San Joaquin Valley Air Pollution Control District were studied for cumulative impacts to air quality. For particulate matter of 10 microns or less, a pollutant, a 1-mile radius around the proposed project was used as the study area. A project is not eligible for federal funds unless it is found to be in conformance with the applicable State Implementation Plan. The proposed project is included in the State Transportation Improvement Program that is considered to be in conformance with the State Implementation Plan. With mitigation measures, the proposed project would not, cumulatively, affect air quality.

Noise

Developments adjacent to the proposed project from Sisk Road to Salida Boulevard, as well as the State Route 99 corridor, were used to evaluate the potential for substantial cumulative effects. The noise impact analysis concluded that the proposed project would result in no substantial impacts, under California Environmental Quality Act, to sensitive noise receptors along the proposed project corridor after mitigation was implemented. This mitigation is primarily through the construction of new soundwalls (sound barriers) along the interchange roadway corridor or along roadways adjacent to the interchange. With mitigation measures, the proposed project would not, cumulatively, increase noise levels.

Avoidance, Minimization, and/or Mitigation Measures

No mitigation is required.

2.5 Climate Change under the California Environmental Quality Act

Regulatory Setting

While climate change has been a concern since at least 1988, as evidenced by the establishment of the United Nations and World Meteorological Organization's Intergovernmental Panel on Climate Change, the efforts devoted to greenhouse gas emissions reduction and climate change research and policy have increased dramatically in recent years. These efforts are primarily concerned with greenhouse-gas emissions related to human activities that produce carbon dioxide, methane, nitrous oxide, tetrafluoromethane, hexafluoroethane, sulfur hexafluoride, HFC-23 (fluoroform), HFC-134a (s, s, s, 2 –tetrafluoroethane), and HFC-152a (difluoroethane).

In 2002, with the passage of Assembly Bill 1493, California launched an innovative and pro-active approach to dealing with greenhouse gas emissions and climate change at the state level. Assembly Bill 1493 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; however, in order to enact the standards, California needed a waiver from the Environmental Protection Agency. The waiver was denied by Environmental Protection Agency in December 2007 and efforts to overturn the decision had been unsuccessful (see *California v. Environmental Protection Agency*, 9th Cir. Jul. 25, 2008, No. 08-70011).

On January 26, 2009, however, it was announced that Environmental Protection Agency would reconsider their decision regarding the denial of California's waiver. On May 18, 2009, President Obama announced the enactment of a 35.5 miles-per-gallon fuel economy standard for automobiles and light-duty trucks which will take effect in 2012. On June 30, 2009, the Environmental Protection Agency granted California the waiver. California is expected to enforce its standards for 2009 to 2011 and then look to the federal government to implement equivalent standards for 2012 to 2016. Granting of the waiver would also allow California to implement even stronger standards in the future. The state is expected to start developing new standards for the post-2016-model years later this year.

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05. The goal of the executive order is to reduce California's greenhouse-gas emissions to the following levels: 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, the Global Warming Solutions Act of 2006. Assembly Bill 32 sets the same overall greenhouse-gas emissions reduction goals 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.

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

Climate change and greenhouse-gas emissions reduction is also a concern at the federal level; however, at this time, no legislation or regulations have been enacted specifically addressing greenhouse-gas emissions reductions and climate change. California, in conjunction with several environmental organizations and several other states, sued to force the Environmental Protection Agency to regulate greenhouse gas as a pollutant under the Clean Air Act (*Massachusetts vs. Environmental Protection Agency et al.*, 549 U.S. 497 (2007)). The court ruled that greenhouse gas does fit within the Clean Air Act’s definition of a pollutant, and that the Environmental Protection Agency does have the authority to regulate greenhouse gas emissions. Despite the Supreme Court ruling, there are no announced federal regulations to date limiting greenhouse-gas emissions.

On December 7, 2009, the Environmental Protection Agency administrator signed two distinct findings regarding greenhouse gases under section 202(a) of the Clean Air Act:

- **Endangerment Finding:** The administrator finds 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 finds 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 Environmental Protection Agency's *Proposed Greenhouse Gas Emission Standards for Light-Duty Vehicles*, published on September 15, 2009¹. On May 7, 2010, the final *Light-Duty Vehicle Greenhouse Gas Emissions Standards and Corporate Average Fuel Economy Standards* was published in the Federal Register².

The final combined 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. They 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 would 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 to 2016).

According to *Recommendations by the Association of Environmental Professionals on How to Analyze Greenhouse Gas Emissions and Global Climate Change in California Environmental Quality Act Documents* (March 5, 2007), 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-gas emissions. In assessing cumulative impacts, it must be determined if a project's incremental effect is "cumulatively considerable" (see California Environmental Quality Act Guidelines sections 15064(i)(1) and 15130.) To make this determination the incremental impacts of the project must be compared with the effects of past, current, and probable future projects. To gather sufficient information on a global scale of all past, current, and future projects to make this determination is a difficult if not impossible task.

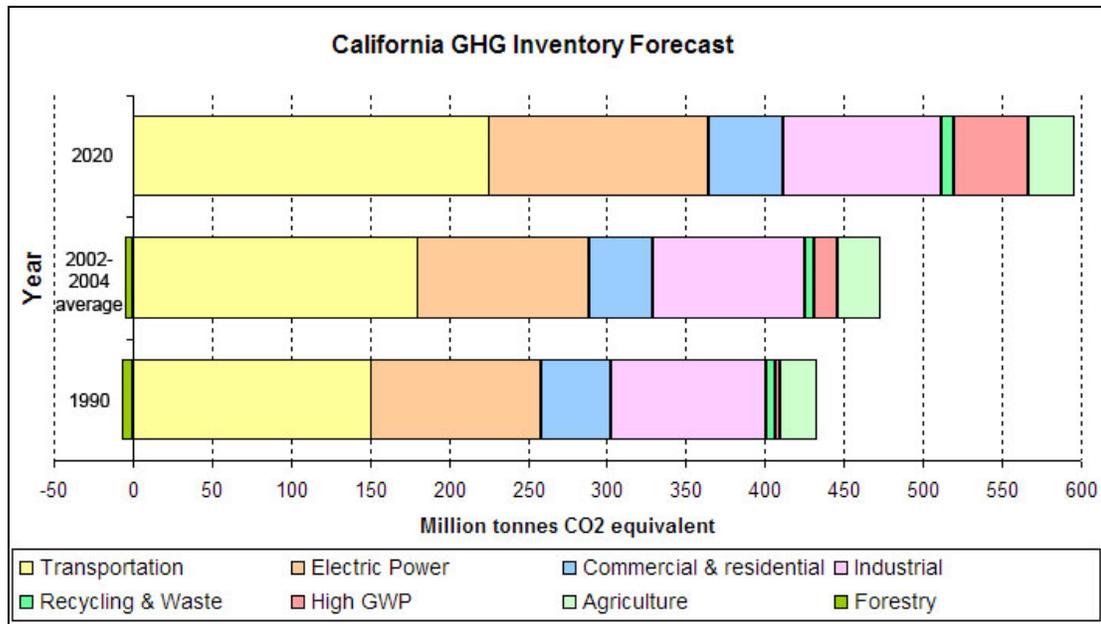
¹ <http://www.epa.gov/climatechange/endorsement.html>

² <http://www.regulations.gov/search/Regs/contentStreamer?objectId=0900006480a5e7f1&disposition=attachment&contentType=pdf>

As part of its supporting documentation for the draft scoping plan, the California Air Resources Board recently released an updated version of the greenhouse-gas emissions inventory for California (June 26, 2008). Figure 2-5, a graph from that update, shows the total greenhouse-gas emissions for California for 1990, 2002 to 2004 average emissions, and 2020 projected emissions if no action is taken.

Caltrans and its parent agency, the Business, Transportation, and Housing Agency, have taken an active role in addressing greenhouse-gas emissions 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 2006b), Caltrans has created and is implementing the *Climate Action Program at Caltrans* that was published in December 2006.

Figure 2-5 California Greenhouse-Gas Inventory

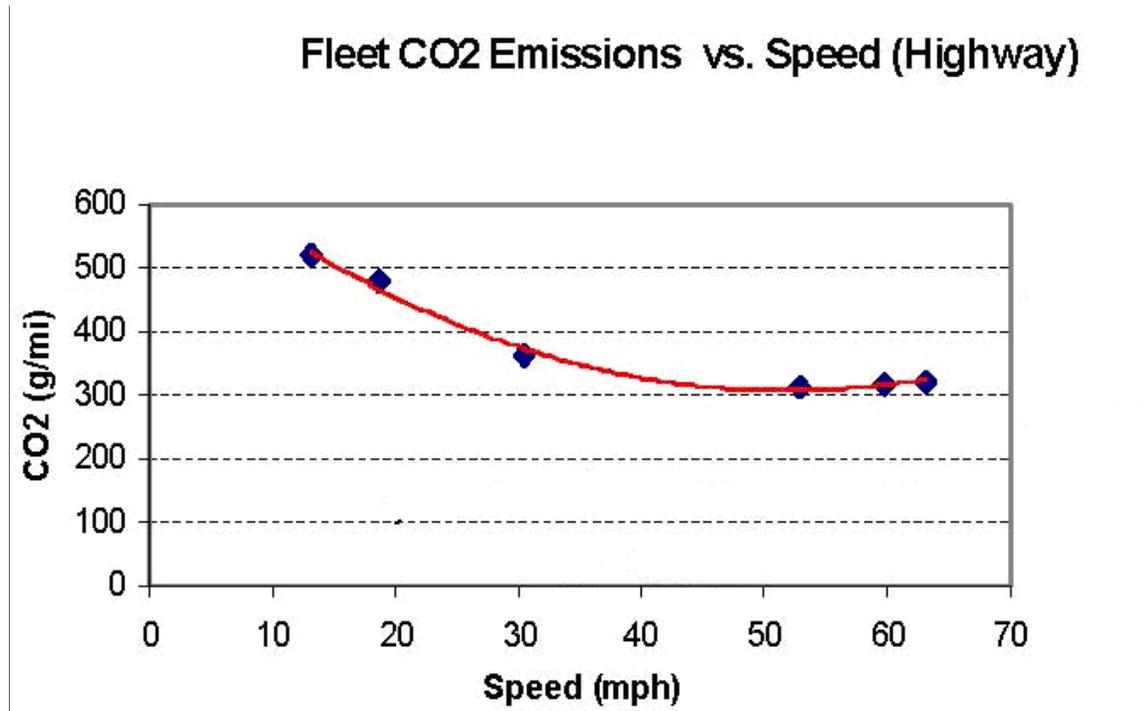


Taken from: <http://www.arb.ca.gov/cc/inventory/data/forecast.htm>

Project Analysis

One of the main strategies in Caltrans’ Climate Action Program is to reduce greenhouse-gas emissions, making 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 to 25 miles per hour) and speeds over 55 miles per hour. Relieving congestion by enhancing operations and improving travel times in high-congestion travel corridors would lead to an overall reduction in greenhouse-gas emissions.



The purpose of the proposed project is to reduce traffic congestion and delay at the State Route 99/State Route 219 (Kiernan Ave) interchange to accommodate existing and future travel demands. The improvements associated with the proposed project are expected to reduce existing and future delays and extensive stacking up of vehicles due to congestion, which if not addressed, would lead to inefficient fuel consumption, deteriorating air quality, and unacceptable level-of-service conditions.

The improvements proposed for traffic-congestion relief include the following:

- Increase interchange capacity by widening State Route 219 (Kiernan Avenue) from four lanes to eight lanes by adding two lanes in each direction (eastbound and westbound) from four lanes to six lanes to reduce delay (congestion)
- Improve traffic operations
- Add auxiliary lanes to State Route 99
- Reconfigure ramps

While there is predicted to be an increase in vehicle-miles-traveled and number of vehicles in the future when compared to existing conditions, the anticipated increase is a result of population increase in existing and planned residential and commercial development in the area. The proposed project would improve the level-of-service at the interchange and reduce overall delay but is not expected to increase the number of vehicles or vehicle-miles-traveled in the area compared to the future No-Build Alternative condition.

As shown in Tables 2.29 and 2.30 below, compared to the No-Build Alternative condition, the proposed project is expected to result in a reduction of vehicle hours of delay, fuel consumption (Table 2.31), and carbon-dioxide emissions (Table 2.32) in 2015 and 2035.

Table 2.29 Intersection Analysis—2015 Conditions

Intersection	Traffic Control	Peak Hour	No Build		Alternative 1		Alternative 2	
			Control Delay	LOS	Control Delay	LOS	Control Delay	LOS
1. Salida Boulevard / Kiernan Avenue	Signal ¹	AM	39	D	18	B	25	C
		PM	>100	F	24	C	24	C
2. SR 99 Southbound Ramps / Kiernan Avenue	Signal ¹	AM	>100	F	21	C	2a = 7 2b = 11 ³	2a = A 2b = B
		PM	>100	F	23	C	2a = 8 2b = 9 ³	2a = A 2b = A
3. SR 99 Northbound Ramps / Kiernan Avenue	Signal ¹	AM	>100	F	13	B	15	B
		PM	30	C	15	B	13	B
4. Indian Ridge Lane / Kiernan Avenue	SSSC ²	AM	4 (37)	A (E)	3 (52)	A (F)	3 (42)	A (E)
		PM	4 (35)	A (D)	2 (25)	A (C)	2 (24)	A (C)
5. Kiernan Court / Kiernan Avenue	SSSC ²	AM	3 (19)	A (C)	2 (5)	A (A)	3 (9)	A (A)
		PM	24 (>100)	C (F)	3 (12)	A (B)	4 (22)	A (C)
6. Sisk Road / Kiernan Avenue	Signal ¹	AM	52	D	28	C	31	C
		PM	>100	F	36	D	43	D
System-wide Vehicle Hours of Delay ⁴		AM	299		74		82	
		PM	599		105		107	
<p>Notes: Results based on SimTraffic simulation of 10 runs.</p> <ol style="list-style-type: none"> 1. Signalized intersection level of service based on weighted average control delay per vehicle, according to the <i>2000 Highway Capacity Manual</i>. 2. Side-street stop intersection level of service based on weighted average control delay per vehicle and worst approach control delay per vehicle, according to the <i>2000 Highway Capacity Manual</i> in the notation: average (worst approach). 3. Under Alternative 2, the southbound ramps are split into two intersections. The off-ramp intersection (2a) is presented first followed by the on-ramp intersection (2b). 4. The vehicle delay was computed by adding up each intersection's vehicle delay which is computed by multiplying the demand volume by the intersection delay (measured in vehicle-hours). <p>Source: State Route 99/Kiernan Avenue Interchange Improvements Traffic Operations Report June 2009.</p>								

Table 2.30 Intersection Analysis—2035 Conditions

Intersection	Traffic Control	Peak Hour	No Build		Alternative 1		Alternative 2	
			Control Delay	LOS	Control Delay	LOS	Control Delay	LOS
1. Salida Boulevard / Kiernan Avenue	Signal ¹	AM	>100	F	23	C	27	C
		PM	>100	F	28	C	25	C
2. SR 99 Southbound Ramps / Kiernan Avenue	Signal ¹	AM	>100	F	20	C	2a = 17 2b = 10 ³	2a = B 2b = B
		PM	63	E	19	B	2a = 7 2b = 10 ³	2a = A 2b = A
3. SR 99 Northbound Ramps / Kiernan Avenue	Signal ¹	AM	>100	F	21	C	26	C
		PM	98	F	19	B	30	C
4. Indian Ridge Lane / Kiernan Avenue	SSSC ²	AM	12 (>100)	B (F)	42 (>100)	E (F)	36 (>100)	E (F)
		PM	6 (21)	A (C)	2 (30)	A (D)	3 (39)	A (F)
5. Kiernan Court / Kiernan Avenue	SSSC ²	AM	6 (84)	A (F)	2 (5)	A (A)	2 (9)	A (A)
		PM	63 (>100)	F (F)	3 (19)	A (C)	6 (50)	A (E)
6. Sisk Road / Kiernan Avenue	Signal ¹	AM	73	E	30	C	30	C
		PM	>100	F	33	C	35	C
System-wide Vehicle Hours of Delay ⁴		AM	1,189		929		145	
		PM	2,376		1,738		125	
<p>Notes: Results based on SimTraffic simulation of 10 runs.</p> <ol style="list-style-type: none"> 1. Signalized intersection level of service based on weighted average control delay per vehicle, according to the <i>2000 Highway Capacity Manual</i>. 2. Side-street stop intersection level of service based on weighted average control delay per vehicle and worst approach control delay per vehicle, according to the <i>2000 Highway Capacity Manual</i> in the notation: average (worst approach). 3. Under Alternative 2, the southbound ramps are split into two intersections. The off-ramp intersection (2a) is presented first followed by the on-ramp intersection (2b). 4. The vehicle delay was computed by adding up each intersection's vehicle delay which is computed by multiplying the demand volume by the intersection delay (measured in vehicle-hours). <p>Source: State Route 99/Kiernan Avenue Interchange Improvements Traffic Operations Report June 2009.</p>								

Table 2.31 Fuel Consumption by Alternative

	No-Build Alternative	Alternative 1	Alternative 2
2015 Morning Peak	170.3 gallons	123.0 gallons	133.6 gallons
2015 Afternoon Peak	245.1 gallons	133.6 gallons	174.5 gallons
2035 Morning Peak	336.4 gallons	169.3 gallons	178.3 gallons
2035 Afternoon Peak	464.8 gallons	169.2 gallons	195.8 gallons

Notes: Fuel consumption is the sum of fuel consumed by all vehicles within the network, measured in gallons.

Source: Fehr & Peers. 2010.

Table 2.32 Carbon Dioxide Emissions by Alternative

	No-Build Alternative	Alternative 1	Alternative 2
2015 Morning Peak	1.52 metric tons	1.10 metric tons	1.19 metric tons
2015 Afternoon Peak	2.19 metric tons	1.19 metric tons	1.56 metric tons
2035 Morning Peak	3.01 metric tons	1.51 metric tons	1.59 metric tons
2035 Afternoon Peak	4.16 metric tons	1.51 metric tons	1.75 metric tons

Source: Fehr & Peers. 2010.

It is important to note that the carbon-dioxide emission numbers are only useful for a comparison between alternatives. The numbers are not necessarily an accurate reflection of what the true carbon-dioxide emissions would be because carbon-dioxide emissions are dependent on other factors that are not part of the model: fuel mix (model emission rates are only for direct engine-out carbon-dioxide emissions, not a full-fuel cycle; fuel-cycle emission rates can vary dramatically depending on the amount of additives, such as ethanol, and the source of the fuel components), rate of acceleration, and the aerodynamics and efficiency of the vehicles.

CEQA Conclusion

Caltrans does not anticipate any increase in overall greenhouse-gas emissions with the project when compared to the future No-Build Alternative. Nonetheless, Caltrans is taking further measures to help reduce energy consumption and greenhouse-gas emissions. These measures are outlined in the following section. It is Caltrans’ 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 the project's direct impact and its contribution on the cumulative scale to climate change.

Construction Emissions

Construction greenhouse-gas emissions include emissions from material processing, construction equipment, and idling traffic due to construction. These emissions would be produced at different levels throughout the construction phase. Emissions can be reduced through innovations in plans and specifications and by using better traffic management during construction phases. In addition, with innovations such as longer pavement life, 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.

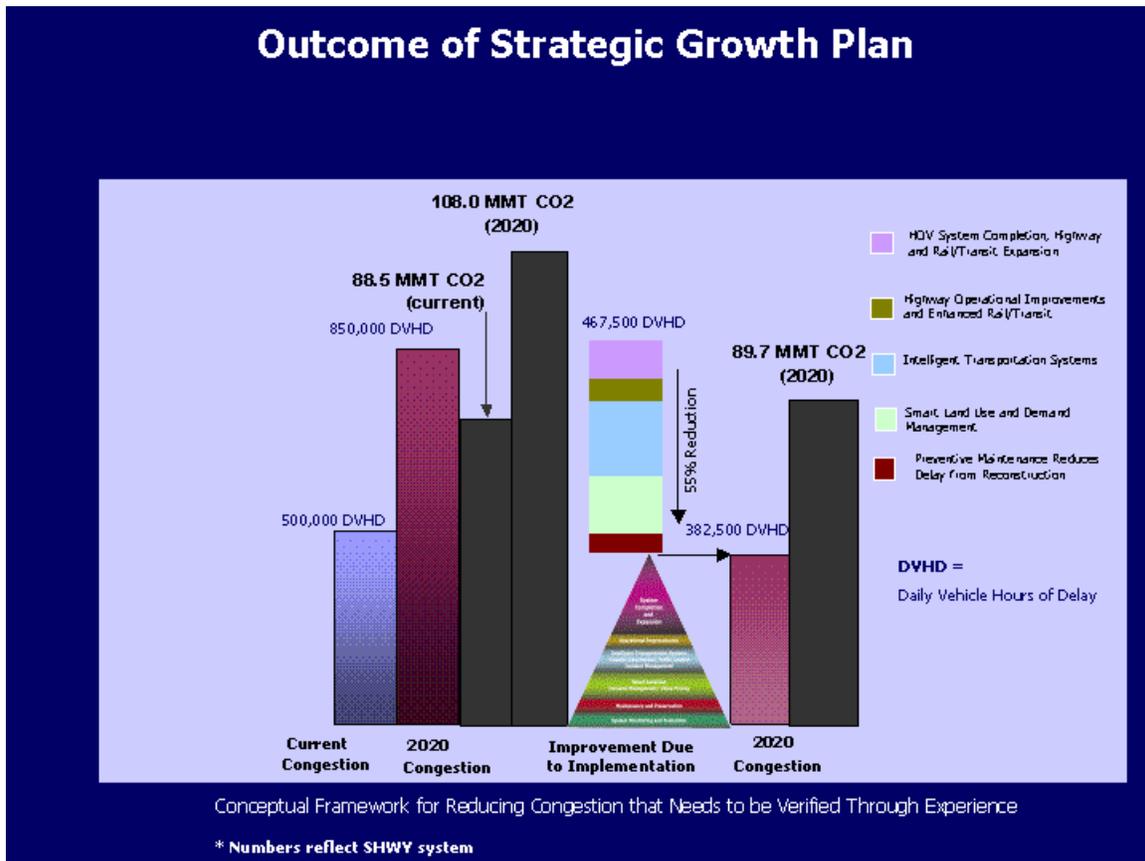
Construction-related greenhouse-gas emissions are expected to occur with the project. Material processing, construction equipment, and idling traffic due to construction would produce emissions. These emissions would be produced at different levels throughout the construction phase. Emissions can be reduced by using measures such as idling restrictions, plans and specifications, and better traffic management during construction phases.

Assembly Bill 32 Compliance

Caltrans continues to be actively involved on the Governor's climate action team as the Air Resources Board works to implement Assembly Bill 1493 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 that is updated each year. 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. The infrastructure-improvement program includes \$107 billion in transportation funding during the next decade.

As shown on the figure below, the California Strategic Growth Plan targets a substantial decrease in traffic congestion below today's level and a corresponding reduction in greenhouse-gas emissions. The California 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 yield the promised reduction in congestion. The California Strategic Growth Plan relies on a complete-systems approach of a variety of strategies: system monitoring and

evaluation, maintenance and preservation, smart land use and demand management, and operational improvements.



As part of the Caltrans Climate Action Program, Caltrans is supporting efforts to reduce vehicle-miles-traveled by planning and using smart land-use strategies: job/housing proximity, developing transit-oriented communities, and high-density housing along transit corridors. Caltrans is working 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 fuel economy in new light- and heavy-duty trucks and cars. It is important to note, however, that the United States Environmental Protection Agency and Air Resources Board hold the control of the fuel economy standards.

Lastly, the use of alternative fuels is also being considered; Caltrans is participating in funding for alternative fuel research at the University of California at Davis. The table

provided below summarizes statewide efforts that Caltrans is implementing to reduce greenhouse-gas emissions. For more information about each strategy, please see the Climate Action Program at Caltrans (December 2006).

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

Sample measures:

1. Caltrans and the California Highway Patrol are working with regional agencies to use intelligent transportation systems to help manage the efficiency of the existing highway system. It is commonly referred to as electronics, communications, or information processing used alone or in combination to improve the efficiency or safety of a surface transportation system.
2. In addition, the county provides ridesharing services and park-and-ride facilities to help manage the growing demand for highway capacity.
3. Landscaping reduces surface warming and through photosynthesis decreases carbon dioxide. The project proposes planting in the intersection slopes and drainage channels; seeding in areas adjacent to frontage roads; and planting a variety of different-sized plant material and scattered skyline trees where appropriate without obstructing the view of the mountains. Caltrans has committed to planting a minimum of 40 trees. These trees would help offset any potential carbon-dioxide emissions increase. Based on a formula from the Canadian Tree Foundation¹, it is anticipated that the planted trees would offset between 7 to 10 tons of carbon dioxide per year.

¹ Canadian Tree Foundation at http://www.tcf-fca.ca/publications/pdf/english_reduceco2.pdf. For rural areas the formula is: # of trees/360 x survival rate = tones of carbon/year removed for each of 80 years.

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

Strategy	Program	Partnership	Method/Process	Estimated Carbon Dioxide Savings (MMT)	
				2010	2020
Smart Land Use	IGR	Lead: Caltrans Partner: Local Governments	Review and seek to mitigate development proposals	Not Estimated	Not Estimated
	Planning Grants	Lead: Caltrans Partner: Local and regional agencies and other stakeholders	Competitive selection process	Not Estimated	Not Estimated
	Regional Plans and Blueprint Planning	Lead: Regional Agencies Partner: Caltrans	Regional plans and application process	0.975	7.8
Operational Improvements and Intelligent Trans. System (ITS) Deployment	Strategic Growth Plan	Lead: Caltrans Partner: Regions	State Intelligent Transportation System; Congestion Management Plan	.007	2.17
Mainstream Energy and greenhouse gas into Plans and Projects	Office of Policy Analysis and Research; Division of Env. Analysis	Interdepartmental effort	Policy establishment, guidelines, technical assistance	Not Estimated	Not Estimated
Educational and Information Program	Office of Policy Analysis & Research	Partner: Interdepartmental, Cal Environmental Protection Agency, California Air Resources Board, CEC	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 .0225
Non-vehicular Conservation Measures	Energy Conservation Program	Green Action Team	Energy Conservation Opportunities	0.117	.34
Portland Cement	Office of Rigid Pavement	Cement and Construction Industries	2.5 % limestone cement mix 25% fly ash cement mix > 50% fly ash/slag mix	1.2 .36	3.6
Goods Movement	Office of Goods Movement	Cal Environmental Protection Agency, California Air Resources Board, BT&H, MPOs	Goods Movement Action Plan	Not Estimated	Not Estimated
Total				2.72	18.67
IGR = Intergovernmental Review MMT = Million miles travelled MPOs = Municipal Planning Organizations			BT&H = Business Transportation & Housing B20 and B100 = Biodiesel fuels CEC = Commission for Environmental Cooperation		

MMT: Million Metric Tons

4. The project would incorporate the use of energy efficient lighting, such as LED traffic signals. LED bulbs — or balls, in the stoplight vernacular — cost \$60 to \$70 apiece but last five to six years, compared to the one-year average lifespan of the incandescent bulbs previously used. The LED balls themselves consume 10 percent of the electricity of traditional lights, which will also help reduce the projects carbon dioxide emissions.
5. According to the Monterey Bay Unified Air Pollution Control District's requirements, idling time for lane closure during construction is restricted to ten minutes in each direction; in addition, according to Caltrans Standard Specifications, the contractor must comply with Monterey Bay Unified Air Pollution Control District's rules, ordinances, and regulations in regards to air quality restrictions.

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 would 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 affects 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 affects to habitat and biodiversity through planning and conservation. The results of these efforts would help California agencies plan and use mitigation strategies for programs and projects.

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

The California Resources Agency (now the 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 would 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 Natural Resources Agency was directed to request the National Academy of Sciences to prepare a Sea-Level Rise Assessment Report by December 2010 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 affects of sea-level rise 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

Executive Order S-13-08 also 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 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 construct 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 in order 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 the next five years (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 regarding local uplift and subsidence, coastal erosion rates, predicted higher high-water levels, storm surge and storm wave data. The State Route 99/State Route 219 (Kiernan Avenue) interchange project was

programmed for construction in 2013 and is exempt at this time from the requirement to analyze the impacts of sea-level rise as directed in Executive Order S-13-08.

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 conducted as part of Governor Schwarzenegger's executive order on sea-level rise and is mobilizing to respond to the National Academy of Sciences Sea-Level Rise Assessment report due for release by December 2010. 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 design standards for its transportation facilities. Once statewide planning scenarios become available, Caltrans would 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.

Chapter 3 **Comments and Coordination**

Early and continuing coordination with the general public and appropriate public agencies is an essential part of the environmental process to determine the scope of environmental documentation, the level of analysis, potential impacts and mitigation measures, and related environmental requirements. Agency consultation and public participation for this project have been accomplished through a variety of formal and informal methods, including project development team meetings, interagency coordination meetings, public meetings, and informal communication with the public, businesses, and interested parties as studies were being conducted.

This chapter summarizes the results of Caltrans' efforts to identify, address, and resolve project-related issues through early and continuing coordination.

3.1 Public Agencies

Stanislaus County-Public Works Department

The project is within the boundaries of the Stanislaus County's jurisdiction. Through monthly project-development team meetings, the Stanislaus County Public Works Department has consistently provided input to ensure there are minimal impacts to local residents and business owners. Coordination of traffic staging, temporary closures and detours would be provided during construction of improvements.

Stanislaus Council of Governments – Model Coordination Committee

Caltrans coordinates with this committee for air quality conformity through monthly project-development team meetings.

3.2 Public Outreach

Historical Resources Consultation

On October 14, 2009, letters describing the project and maps showing the Area of Potential Effects were sent to the Native American representatives on the contact list provided by the Native American Heritage Commission. The letters requested any information or concerns they might have regarding the proposed project. No responses to the letters were received within eight weeks despite several follow-up telephone calls to each representative. A summary of these calls is presented below:

- *Ryan Garfield, Vice Chairman, Tule River Indian Tribe:* On November 20, 2009, a voice mail message was left asking Mr. Garfield to provide any information or concerns regarding cultural resources within the Area of Potential Effect. No response has been received to date.
- *Jay Johnson, Spiritual Leader, Southern Sierra Miwuk Nation:* On November 20, 2009, a voice mail message was left asking Mr. Johnson to provide any information or concerns regarding cultural resources within the Area of Potential Effect. No response has been received to date.
- *Katherine Erolinda Perez, North Valley Yokuts Tribe:* On November 20, 2009, a voice mail message was left asking Ms. Perez to provide any information or concerns regarding cultural resources within the Area of Potential Effect. No response has been received to date.
- *Anthony Brochini, Chairperson, Southern Sierra Miwuk Nation:* On November 20, 2009, a voice mail message was left asking Mr. Brochini to provide any information or concerns regarding cultural resources within the Area of Potential Effect. No response has been received to date.
- *Les James, Spiritual Leader, Southern Sierra Miwuk Nation:* On November 20, 2009, a voice mail message was left asking Mr. James to provide any information or concerns regarding cultural resources within the Area of Potential Effect. No response has been received to date.

On September 8, 2009, a letter describing the project and maps showing the proposed project were sent to the Native American Historical Commission in Sacramento asking the commission to review its Sacred Lands File for any Native American cultural resources that might be affected by the proposed project. Also requested were the names of Native Americans who might have information or concerns about the proposed project. Ms. Katy Sanchez, Native American Historical Commission Program Analyst, replied in a fax dated September 16, 2009, that a review of the Sacred Lands File did not indicate any “Native American cultural resources in the immediate project area.” Ms. Sanchez also provided a list of Native American contacts.

On September 8, 2009, a letter describing the project with maps depicting the Area of Potential Effect was sent to the McHenry Museum and Historical Association. No response to the letter was received within eight weeks and a made a follow-up telephone call was made. On November 20, 2009, a voice mail message was left asking the McHenry Museum and Historical Society to contact the staff with any

information or concerns regarding cultural resources within the Area of Potential Effect. No response has been received to date.

Public Meeting – November 10, 2009

On November 10, 2009, at 5:30 p.m., Caltrans held a public information meeting at the Nick W. Blom Salida Regional Library. Approximately 88 persons signed in at the door.

The meeting format included two open-house periods, one before and one after a presentation by the consultant-team project manager. Upon arriving, attendees were asked to sign in to maintain an attendance record and to ensure all interested parties would be added to the project mailing list. Each attendee received a handout with an agenda, project background and purpose, project limits, and information on how to comment on the project. Attendees were encouraged to visit the information stations around the room and to view maps, graphics, and display boards. Project-development team members were available at the stations to explain the displays, answer questions, and receive public input.

Below is a brief summary of the written or dictated comments received at the public information meeting:

- Concentrate on Kiernan and do it right
- Do not build a Hammett Road interchange
- Consider bicycle and pedestrian needs
- Extend Ladd Road to the State Route 99/Hammett Road interchange
- Widen State Route 99
- Avoid impacts to agricultural land
- Avoid urban sprawl
- Synchronize traffic signal lights
- Consider groundwater issues
- Design Kiernan Road interchange for the north-county corridor
- Improve Kiernan Road interchange
- Widen Kiernan Avenue
- Improve Pelandale
- For State Route 99/Kiernan, select Alternative 2
- For State Route 99/Hammett, select Alternative 2
- For State Route 99/Hammett, select Alternative 3
- “No” against it all

- Concern about impact on Salida
- Open frontage road/parking lot at American Chapman College
- Please get information onto the Web
- Make the fences at the drainage ditches brown
- Make a shared turn lane at Kiernan Alternative 2

Chapter 4 List of Preparers

This document was prepared by the following staff:

LSA Associates (Environmental Consulting Staff)

Richard Harlacher, Principal Biologist and Wetlands Specialist. M.S., Biology, California State Polytechnic University, Pomona; 30 years of wildlife biology and wetlands experience. Contribution: Project management and project coordination.

Edward Heming, Senior Environmental Planner. M.S., Environmental Planning, California State University, Fullerton; 7 years of environmental planning and environmental science experience. Contribution: Environmental Impact Report/Environmental Assessment.

Bill Mayer, Principal Environmental Planner. B.S., Urban Planning, California State Polytechnic University, Pomona; 35 years of environmental planning experience. Contribution: Project management and project coordination.

Amberly Morgan, Assistant Environmental Planner. B.A., Environmental Studies, California State University, Sacramento; 3 years of environmental planning experience. Contribution: Floodplain Evaluation Technical Report.

Mike Trueblood, Biologist. B.S., Wildlife, Fish, and Conservation Biology; University of California, Davis; 8 years of biology experience. Contribution: Natural Environment Study.

Caltrans Staff

Allam Alhabaly, Transportation Engineer. B.S., Industrial Engineering, California State University, Fresno; 10 years environmental technical studies experience. Contribution: Oversight review of the Noise Study Report.

Michael Calvillo, Associate Environmental Planner. B.S., Biology, California State University, Fresno; 10 years environmental planning experience. Contribution: Coordinated oversight review of the technical studies and provided oversight review of the Initial Study/Environmental Assessment.

Abdul Rahim Chafi, Transportation Engineer. Ph.D., Engineering Management, California Coast University, Santa Ana; 14 years environmental technical

studies experience. Contribution: Oversight review of the Air Quality technical report.

William Lawrence Dutterra, Landscape Architect. B.S., Landscape Architecture, California Polytechnic State University, San Luis Obispo; 20 years experience in landscape architecture. Contribution: Oversight review of the Visual Impact Assessment.

Rajveev Dwivedi, Associate Engineering Geologist. Ph.D., Environmental Engineering, Oklahoma State University, Stillwater; 18 years environmental technical studies experience. Contribution: Oversight review the Water Quality Analysis.

Susan Greenwood, Associate Environmental Planner. B.S., Environmental Health Science, California State University, Fresno; 20 years environmental health, hazardous waste, and hazardous material management experience. Contribution: Oversight review of the Initial Site Assessment.

Christina Hibbard, Project Manager. M.A., Anthropology, 1998; PMP certified with the Project Management Institute, 2004. Contribution: Caltrans District 10 Project Manager.

Jose Huerta, Senior Transportation Engineer. Contribution: Provided supervision of design engineering oversight review.

Gail Miller, Senior Environmental Planner. B.A., Public Administration, California State University, Fresno; 19 years of land use and environmental planning experience. Contribution: Provided supervision of the environmental oversight review.

Wendy M. Nettles, Associate Environmental Planner. M.A., Anthropology, Florida State University; B.A., Anthropology, Florida State University; 18 years of archaeology/cultural resources management experience. Contribution: Oversight review of the Archaeological Survey Report and Historic Property Survey Report.

Phyllis Sarto, Right-of-Way Agent. Contribution: Oversight review of the Draft Relocation Impact Memorandum and Draft Relocation Impact Statement.

Wuthy Seng, Transportation Engineer-Civil. Contribution: Provided design engineering oversight.

Raychel Skeen, Associate Environmental Planner. B.A., Geography, Minor in Geology, California State University, Humboldt; 16 years of environmental and land use planning experience. Contribution: Coordinated oversight review of the technical studies.

Richard C. Stewart, Engineering Geologist, P.G. B.S., Geology, California State University, Fresno; 21 years of hazardous waste and water quality experience; 4 years of paleontology/geology experience. Contribution: Oversight review of the Paleontological Initial Report/Paleontological Evaluation Report.

Philip Vallejo, Environmental Planner (Architectural History), B. A., History, California State University, Fresno; 8 years experience in architectural history field. Contribution: Oversight review of the Historic Resources Evaluation Report.

Charles Walbridge, Associate Environmental Planner. B.S., Biological Sciences, California State University, Fresno; 10 years of environmental planning experience. Contribution: Oversight review of the Natural Environment Study

Appendix A California Environmental Quality Act Checklist

The following checklist identifies physical, biological, social, and economic factors that might be affected by the proposed project. The California Environmental Quality Act impact levels include “potentially significant impact,” “less than significant impact with mitigation,” “less than significant impact,” and “no impact.”

Supporting documentation of all California Environmental Quality Act checklist determinations is provided in Chapter 2 of this Initial Study/Environmental Assessment. Documentation of “No Impact” determinations is provided at the beginning of Chapter 2. Discussion of all impacts, avoidance, minimization, and/or mitigation measures is under the appropriate topic headings in Chapter 2.

Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
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I. AESTHETICS: Would the project:

- | | | | | |
|---|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| a) Have a substantial adverse effect on a scenic vista | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) Substantially degrade the existing visual character or quality of the site and its surroundings? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

II. AGRICULTURE AND FOREST RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

- | | | | | |
|---|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Conflict with existing zoning for agricultural use or a Williamson Act contract? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c) Conflict with existing zoning for or cause rezoning of forestland (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d) Result in the loss of forestland or conversion of forestland to non-forest use? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| e) Involve other changes in the existing environment that, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forestland to non-forest use? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

III. AIR QUALITY: Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:

- | | | | | |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|
| a) Conflict with or obstruct implementation of the applicable air quality plan? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|

Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
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- b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?
- c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?
- d) Expose sensitive receptors to substantial pollutant concentrations?
- e) Create objectionable odors affecting a substantial number of people?

IV. BIOLOGICAL RESOURCES: Would the project:

- a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?
- b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?
- c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?
- d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?
- e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?
- f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

V. CULTURAL RESOURCES: Would the project:

- a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?
- b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?

Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
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c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

d) Disturb any human remains, including those interred outside of formal cemeteries?

VI. GEOLOGY AND SOILS: Would the project:

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?

ii) Strong seismic ground shaking?

iii) Seismic-related ground failure, including liquefaction?

iv) Landslides?

b) Result in substantial soil erosion or the loss of topsoil?

c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?

d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?

e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?

VII. GREENHOUSE GAS EMISSIONS: Would the project:

a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

An assessment of the greenhouse-gas emissions and climate change is included in the body of environmental document. While Caltrans has included this good-faith effort to provide the public and decision-makers as much information as possible about the project, it is Caltrans' 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 significance determination regarding the project's direct and indirect impact with respect to climate change. Caltrans does remain firmly committed to using measures that help reduce the potential effects of the project. These measures are outlined in the body of the environmental document.

Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
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VIII. HAZARDS AND HAZARDOUS MATERIALS: Would the project:

- | | | | | |
|--|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| h) Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

IX. HYDROLOGY AND WATER QUALITY: Would the project:

- | | | | | |
|---|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| a) Violate any water quality standards or waste discharge requirements? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
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d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

f) Otherwise substantially degrade water quality?

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

h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?

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

j) Result in inundation by seiche, tsunami, or mudflow?

X. LAND USE AND PLANNING: Would the project:

a) Physically divide an established community?

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

c) Conflict with any applicable habitat conservation plan or natural community conservation plan?

XI. MINERAL RESOURCES: Would the project:

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

XII. NOISE: Would the project result in:

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

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

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

Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
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d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?

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

(f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

XIII. POPULATION AND HOUSING: Would the project:

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

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

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

XIV. PUBLIC SERVICES:

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

Fire protection?

Police protection?

Schools?

Parks?

Other public facilities?

XV. RECREATION:

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

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

Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
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XVI. TRANSPORTATION/TRAFFIC: Would the project:

- | | | | | |
|---|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit? | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| e) Result in inadequate emergency access? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| f) Conflict with adopted policies, plans or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

XVII. UTILITIES AND SERVICE SYSTEMS: Would the project:

- | | | | | |
|---|--------------------------|--------------------------|--------------------------|-------------------------------------|
| a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| g) Comply with federal, state, and local statutes and regulations related to solid waste? | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

XVIII. MANDATORY FINDINGS OF SIGNIFICANCE

Potentially significant impact	Less than significant impact with mitigation	Less than significant impact	No impact
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a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

Appendix C Summary of Relocation Benefits

California Department of Transportation Relocation Assistance Program

Relocation Assistance Advisory Services

The California Department of Transportation (Caltrans) would provide relocation advisory assistance to any person, business, farm, or non-profit organization displaced as a result of Caltrans' acquisition of real property for public use. Caltrans would assist residential displacees in obtaining comparable decent, safe, and sanitary replacement housing by providing current and continuing information on sales price and rental rates of available housing. Non-residential displacees would receive information on comparable properties for lease or purchase.

Residential replacement dwellings would be in equal or better neighborhoods, at prices within the financial means of the individuals and families displaced, and reasonably accessible to their places of employment. Before any displacement occurs, displacees would be offered comparable replacement dwellings that are open to all persons regardless of race, color, religion, sex, or national origin, and are consistent with the requirements of Title VIII of the Civil Rights Act of 1968. This assistance would also include supplying information concerning federal- and state-assisted housing programs, and any other known services being offered by public and private agencies in the area.

Residential Relocation Payments Program

For more information or a brochure on the residential relocation program, please contact Gail Miller at 2015 E. Shields Avenue, Suite 100, Fresno, CA 93726.

The brochure on the residential relocation program is also available in English at http://www.dot.ca.gov/hq/row/pubs/residential_english.pdf and in Spanish at http://www.dot.ca.gov/hq/row/pubs/residential_spanish.pdf.

If you own or rent a mobile home that may be moved or acquired by Caltrans, a relocation brochure is available in English at http://www.dot.ca.gov/hq/row/pubs/mobile_eng.pdf and in Spanish at http://www.dot.ca.gov/hq/row/pubs/mobile_sp.pdf.

Business and Farm Relocation Assistance Program

For more information or a brochure on the relocation of a business or farm, please contact Gail Miller at 2015 E. Shields Avenue, Suite 100, Fresno, CA 93726.

The brochure on the business relocation program is also available in English at http://www.dot.ca.gov/hq/row/pubs/business_farm.pdf and in Spanish at http://www.dot.ca.gov/hq/row/pubs/business_sp.pdf.

Additional Information

No relocation payment received would be considered as income for the purpose of the Internal Revenue Code of 1954 or for the purposes of determining eligibility or the extent of eligibility of any person for assistance under the Social Security Act or any other federal law (except for any federal law providing low-income housing assistance).

Persons who are eligible for relocation payments and who are legally occupying the property required for the project would not be asked to move without being given at least 90 days advance notice, in writing. Occupants of any type of dwelling eligible for relocation payments would not be required to move unless at least one comparable “decent, safe, and sanitary” replacement residence, open to all persons regardless of race, color, religion, sex, or national origin, is available or has been made available to them by the state.

Any person, business, farm, or non-profit organization, which has been refused a relocation payment by Caltrans, or believes that the payments are inadequate, may appeal for a hearing before a hearing officer or Caltrans’ Relocation Assistance Appeals Board. No legal assistance is required; however, the displacee may choose to obtain legal council at his/her expense. Information about the appeal procedure is available from Caltrans’ Relocation Advisors.

The information above is not intended to be a complete statement of all of Caltrans’ laws and regulations. At the time of the first written offer to purchase, owner-occupants are given a more detailed explanation of the state's relocation services. Tenant occupants of properties to be acquired are contacted immediately after the first written offer to purchase, and also given a more detailed explanation of Caltrans’ relocation programs.

Important Notice

To avoid loss of possible benefits, no individual, family, business, farm, or non-profit organization should commit to purchase or rent a replacement property without first contacting a Department of Transportation relocation advisor at:

State of California Department of Transportation, District 10
1976 E. Charter Way/1976 E. Dr. Martin Luther King Jr. Boulevard
Stockton, CA 95205

Appendix D Minimization and/or Mitigation Summary

Relocations

- All displacees would be contacted by a relocation agent who would ensure that eligible displaced residents receive their full relocation benefits including advisory assistance, and that all activities would be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. Relocation resources are available, free of discrimination, to all displaced residents.
- The Uniform Relocation Assistance and Real Property Acquisitions Policies Act (Uniform Act) of 1970 (Public Law 91-646, 84 Stat. 1894) mandates that payments be made available to eligible residents, businesses, and nonprofit organizations displaced or affected by projects. The Uniform Act provides for equitable land-acquisition policies.
- Where acquisition is unavoidable, the provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act and the 1987 Amendments as implemented by the Uniform Relocation Assistance and Real Property Acquisition Regulations for Federal and Federally Assisted Programs adopted by the Department of Transportation dated March 2, 1989 would be followed. An independent appraisal of the affected property would be obtained and an offer for the full appraisal would be made.

Utilities/Emergency Services

A number of utilities for water, wastewater, storm drainage, electric and natural gas services, and other services are in the project area. Construction of the proposed project may require the relocation of utilities that would be affected by the project. These relocations should not present any unusual circumstances and are considered routine for roadway construction projects. Minimization measures to alleviate utilities/emergency services impacts are as follows:

- The project would be designed to minimize conflicts with utilities in the project area.
- The project would include relocation of those utilities that would could not be reached for maintenance or access purposes as a result of the project.

- The contractor would be required to provide notification to utility users of any short-term, limited interruptions of service.
- If unexpected underground utilities were encountered, the contractor would coordinate with the utility provider to develop plans that address the utility conflict, protect the utility if needed, and limit service interruptions.
- The contractor would circulate construction schedules and traffic control information to county emergency-service providers at least one to two weeks before any road closures.
- The Traffic Management Plan would address redirecting emergency services during temporary lane closures.

Traffic and Transportation/Pedestrian and Bicycle Facilities

The project would implement the following measures to reduce construction-related traffic impacts:

The project would implement the following measures to reduce construction-related traffic impacts:

- The contractor would be required to prepare and implement a traffic management plan that would identify the locations of temporary detours and signage to facilitate local traffic patterns and through-traffic requirements.
- The project special provisions of the highway contract would require that emergency service providers (i.e., law enforcement, fire protection, and ambulance services) be given adequate advance notice of any street closures during the construction phases of the proposed project.
- As much as possible, construction activities would be coordinated to avoid blocking or limiting access to homes and businesses. Residents and business owners would be notified in advance about potential access or parking difficulties before construction activities begin.
- Any interchange, ramp, or road closures required during construction would, to the extent possible, be limited to nighttime hours to reduce effects on businesses in the study area. Alternative 2 would provide temporary southbound ramp relocations north and south of Kiernan Avenue during construction.
- The traffic management plan would be prepared to address short-term disruptions in existing circulation patterns during construction; for example, the traffic management plan would identify the locations of temporary detours or temporary roads to facilitate local traffic circulation and through-traffic requirements.

Visual/Aesthetics

Overall impacts to “views of the road” result in some decline to the surrounding visual environment as a result of the proposed project. Changes to the view as a result of the project alternatives would marginally degrade all observation points. Overall impacts to “views from the road” would not change the views dramatically as a result of the proposed project. Measures to alleviate visual impacts are as follows:

- Architectural detailing and/or surface treatments consistent with the surrounding community should be incorporated into new bridge design.
- Artistic soundwall design should be used to break up the built environment and enhance the driving experience. Soundwall design should fit with the surrounding area and meet community goals.
- Soundwalls should be designed to discourage graffiti. Some examples of such soundwall design include rough-textured finishes or uneven surfaces, graffiti-resistant coatings, and vine plantings of a type that would attach to walls.
- Replacement planting would include vegetation seen in the original landscaping.
- Areas affected or disturbed by construction would be replanted with standard replacement landscaping and irrigation systems.

Water Quality and Storm Water Runoff

With the following avoidance, minimization, and proposed mitigation measures incorporated into the project, there would be minimal impact to water quality:

- Preparation and use of the construction-site best-management practices that comply with the provisions of Caltrans’s Statewide National Pollutant Discharge Elimination System permit and any subsequent permit as it relates to building activities for the project. Best-management practices would include submission of a notice of construction to the Regional Water Quality Control Board at least 30 days before the start of construction, preparation and implementation of a Stormwater Pollution Prevention Plan, and submission of a notice of construction completion to the Regional Water Quality Control Board upon completion of construction and stabilization of the project site.
- Consideration and incorporation of design pollution prevention and treatment control best-management practices for the project in accordance with the procedures outlined in the Stormwater Quality Handbooks, Project Planning and Design Guide. Best-management practices would include coordination with the

Regional Water Quality Control Board with respect to feasibility, maintenance, and monitoring of treatment control best-management practices as set forth in the Caltrans's Statewide Stormwater Management Plan.

- Identify all potential locations of concentrated flow and provide proper pavement-drainage design to reduce concentrated flow to the accepted maximum of 0.1 cubic feet per second.
- Where existing fill slopes are modified, all existing drains or swales that are affected should be relocated, extended or modified as necessary to handle water runoff.
- Where existing underdrains are affected, the drain would be rerouted or relocated to be next to the changed edge of pavement. Any reconstruction of underdrains would be to current Caltrans standards.
- Additional retention basins are required to offset the loss in volume (amount of water stored) and provide additional volume for the increased pavement area. Alternative 1 would remove one existing retention basin, modify a second existing retention basin, and build two additional retention basins (for a total of three retention basins). Alternative 2, with an adequate margin of error, would remove one existing retention basin, modify a second existing retention basin and build four new retention basins (for a total of five retention basins) in order to have the capacity to hold two 10-year, 24-hour storms and are sized for the ultimate build-out condition using one 10-year, 24-hour storm.
- The existing pump station should be replaced with a new pump station just north of the existing pump station. The existing storage box would remain, with the existing box extended to connect to the new pump station. The new pump station would discharge to the same 30-inch storm drain that serves the existing pump station. The new pump station peak discharge would be limited to the existing peak discharge of 3,500 gallons per minute, with a total dynamic head of 25 feet. There are two pumps with this capacity, plus a low-flow pump with a capacity of 300 gallons per minute. In the new pump station, the low-flow or groundwater pump be in a nearby structure with a separate wet well.

Paleontology

Because the proposed project would affect paleontologically sensitive soil layers that are of potential scientific significance, a Paleontological Mitigation Plan would be developed and implemented. The implementation of the Paleontological Mitigation Plan before construction would reduce potential adverse impacts to paleontological

resources. This Paleontological Mitigation Plan should be synthesized from outlines and guidelines provided by Caltrans and the Society of Vertebrate Paleontology and be specifically tailored to the resources and sedimentary formations encountered by the project. The Society of Vertebrate Paleontology and the University of California Museum of Paleontology at University of California, Berkeley would be consulted to ensure that the full range of potential scientific research domains are adequately addressed.

In areas determined to have a high potential for paleontological resources, the Paleontological Mitigation Plan should include the following:

- A preliminary survey and surface salvage prior to construction.
- A qualified principal paleontologist would be present at pre-grading meetings to consult with grading and excavation contractors.
- Monitoring and salvage should be done during excavation. A paleontological monitor, under the direction of the qualified principal paleontologist, would be present to inspect road cuts for fossils at all times during original grading involving sensitive geologic formations.
- Preparation, such as screen washing to recover small specimens (if applicable), and specimen preparation to a point of stabilization, including identification, cataloging, curation, and storage of specimens should be done.
- A final report of the mitigation should be prepared to document any finds and their significance. The report should be deposited in a scientific institution with paleontological collections.

The Paleontological Mitigation Plan would assist Caltrans in complying with environmental laws and regulations requiring mitigation of impacts on paleontological macrofossil resources if found within the project.

Hazardous Waste or Materials

- Testing for hazardous levels of aerially-deposited lead would be done during the design phase. The appropriate standard special provisions would be incorporated during the design phase once the analytical results are known. A Lead Compliance Plan would be required no matter what levels of lead are in the soil. This cost is expected to be \$3,000. Testing would not affect the design-phase

schedule and is estimated to cost \$10,000. If soil testing results in a determination that there are elevated levels of lead, it may be possible to encapsulate the soil following the Department of Toxic Substances Control Act variance under certain conditions. If this is not possible, then soil that is hazardous material would need to be disposed of in a Class 1 landfill at an approximate cost of \$350 per cubic yard. Based on the project length and the fact that aerially-deposited lead is not typically found more than a few feet beneath the soil surface, a worst-case cost for removal would be \$385,000. No delays to the project schedule are anticipated from encapsulation or disposal.

- Demolition of bridges and buildings built prior to 1969 would require an assessment of asbestos-containing building materials and lead-based paint. An asbestos investigation should be performed by an inspector certified by the Asbestos Hazardous Emergency Response Act under Toxic Substance Control Act Title II. Lead-based paint surveys should be conducted by an inspector certified by the California Occupational Safety and Health Administration under State of California rules and regulations. These surveys would be conducted by Caltrans Right-of-Way during acquisition and/or prior to building demolition. Asbestos-containing building materials and lead-based paint should be surveyed and abated (as needed) by using a contractor certified to perform such work. Testing would not affect the design-phase schedule and is estimated to cost \$3,600.
- Past land use studies suggest the potential for hazardous chemical contamination from organochlorine pesticides, organophosphorous pesticides, chlorinated herbicides, and heavy metals other than lead. These potential contaminants may be present within the properties to be acquired for right-of-way. Consequently, additional studies for these contaminants should be done on selected properties within the project area to minimize future liability. A risk assessment of the potential hazards (pesticides and heavy metal contamination) should be conducted during the design phase on properties to be acquired throughout the project area and along the railroad right-of-way. Testing would not affect the design-phase schedule and is estimated to cost \$20,000.
- Cylindrical transformers are located within project right-of-way limits and may need to be relocated during the course of the project. These transformers could contain polychlorinated biphenyls that are known to be harmful to humans and the environment. The transformers would need to be handled using the appropriate standards and procedures for their removal. The proper utility company would be notified.

- Thermoplastic striping (roadway paint) removal activity would be conducted in compliance with all applicable laws and regulations such as the guidelines by the California Occupational Office of Safety and Health, San Joaquin Valley Unified Air Pollution Control District, and applicable best-management practices. Standard special provisions would be used for removal of the traffic stripe.
- Prior to the start of any construction activities, including grading or ground disturbance, it is recommended that the presence or absence of the historic-era underground storage tank at 4648 Kiernan Avenue be determined to avoid accidental rupture of the tank during earth-moving activities.

Air Quality

Construction Impacts

Compliance with Caltrans' Dust Control Plan would minimize impacts to air quality from construction emissions:

- To reduce fugitive-dust emissions, the construction contractor will adhere to the requirements of San Joaquin Valley Air Pollution Control District Regulation VIII.
- The construction contractor should comply with Caltrans' Standard Specifications Section 7-1.01F and Section 10 of Caltrans' Standard Specifications.
- The construction contractor should comply with San Joaquin Valley Air Pollution Control District Rule 9510 and submit an air-impact assessment application if it is determined that the construction-related emissions exceed the established thresholds.
- The construction contractor should limit traffic speeds on unpaved roads to 15 miles per hour.
- The construction contractor should install sandbags or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than 1 percent.
- The construction contractor should install wheel washers for all exiting trucks, or wash all trucks and equipment leaving the site.
- The construction contractor should install windbreaks at windward side(s) of construction area.
- The construction contractor should suspend excavation and grading activity when winds exceed 20 miles per hour (regardless of wind speed, an owner/operator must comply with Regulation VIII's 20 percent opacity limitation).
- The construction contractor should limit area excavation, grading, and other construction activity at any one time.

- The construction contractor should properly and routinely maintain all construction equipment, as recommended by the manufacturer manuals, to control exhaust emissions.
- The construction contractor should shut down equipment when not in use for extended periods of time to reduce emissions associated with idling.

Long-term Impacts

No mitigation measures are required, as the build alternatives would not result in substantial long-term air quality impacts.

Noise and Vibration

The reasonableness of a soundwall was determined by comparing the estimated cost of building the soundwall against the total reasonable allowance. The total reasonable allowance was determined based on the number of benefited residences multiplied by the reasonable allowance per residence. Construction-cost estimates were based on standard masonry block construction. If the estimated soundwall construction cost exceeded the total reasonable allowance, the soundwall was determined not to be reasonable. However, if the estimated soundwall construction cost was within the total reasonable allowance, the soundwall was determined to be reasonable.

Based on the studies completed to date, Caltrans intends to reduce noise by placing soundwalls at locations shown in Figures 2-3a, 2-3b, 2-4a, and 2-4b, with respective lengths and average heights of shown in Table 2.25. Preliminary design data indicate that soundwalls would reduce noise levels by 5 dBA for residences at a cost of shown in Table 2.26. If during final design, conditions have substantially changed, noise abatement may not be necessary. The final decision of the noise abatement would be made upon completion of the project design and the public involvement processes.

- **Alt1 SB3.** This sound barrier (soundwall) was analyzed for Alternative 1 and would be located along the southern property line of the residential properties that border Kiernan Court. This sound barrier would also wrap around to the north along the eastern property line of the residential properties would, with implementation of the project, border Sisk Road. This sound barrier is modeled to protect the existing residential properties represented by receptors R7, R8, R31, R32, and R33.
- **Alt2 SB3.** This sound barrier (soundwall) was analyzed for Alternative 2 and would be built along the northwest project limits that borders Kiernan Court, State

Route 219 (Kiernan Avenue), and Sisk Road. This sound barrier is modeled to protect the existing residential properties represented by receptors R7, R8, R32, and R33.

Secondary Impacts of Abatement Measures

Based on the analysis of the Noise Abatement Decision Report, all secondary effects of implementation, including biological impacts, water quality, visual impacts, hazardous waste, and cultural resources impacts of the recommended abatement measures were determined to be not substantial. Therefore, no adverse effects are anticipated to result from the construction of soundwalls as part of the proposed project.

Construction Noise Abatement

During construction of the project, noise from building activities may intermittently be heard in the area. Construction equipment can generate noise levels ranging from 70 to 90 decibels at a distance of 50 feet. Noise produced by construction equipment would be reduced over distance at a rate of about 6 decibels per doubling of distance.

Construction noise is regulated by Caltrans Standard Specifications Section 7-1.0011, “Sound Control Requirements,” which states that noise levels generated during building would comply with applicable local, state, and federal regulations, and that all equipment would be fitted with adequate mufflers according to the manufacturer’s specifications.

No adverse noise effects from construction are anticipated because construction would be done in accordance with Caltrans Standard Specifications Section 7-1.011 and applicable local noise standards. Construction noise would be short-term, intermittent, and overshadowed by local traffic noise. Further, implementing the following measures would minimize the temporary noise effects during building activities:

- All equipment would have sound-control devices that are no less effective than those provided on the original equipment. No equipment would have an unmuffled exhaust.
- As directed by Caltrans, the contractor would 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.

Animal Species

Nesting Birds

- All clearing and grubbing should be done during the non-nesting season (between October 1 and February 28). If this is not possible, a qualified biologist should do a survey for nesting birds in the biological study area by. The survey must take place a maximum of 14 days prior to the start of construction. If nesting birds are found within the biological study area, a setback of 100 feet from nesting areas shall be established and maintained during the nesting season. This setback applies whenever construction or other ground disturbing activities must begin during the nesting season in the presence of nests which are known to be occupied. Setbacks shall be marked by brightly colored temporary fencing and maintained until construction is complete or the young have fledged, as determine by a qualified biologist.

Alternatively, the setback (if required) may be reduced if a qualified biologist is present to monitor the nest(s) when construction begins. If the biologist determines nesting is not affected by construction activities with the reduced setback, work can proceed. If it is determined that construction activities are adversely affecting the nesting birds with the reduced setback, all construction within 100 feet of a nest shall be halted until the biologist can establish an appropriate setback.

With the implementation of the minimization measures described above (i.e., preconstruction surveys and buffers) impacts to nesting birds would be avoided.

Invasive Species

To avoid the distribution of invasive species to off-site areas during project construction, contract specifications should include, at a minimum, the following measures:

- All earthmoving equipment to be used during project construction should be thoroughly cleaned before arriving on the project site.
- All seeding equipment (i.e., hydro-seed trucks) should be thoroughly rinsed at least three times prior to arriving at the project site and the beginning of seeding work.

- To avoid spreading any nonnative invasive species already existing on-site to off-site areas, all equipment should be thoroughly cleaned before leaving the site.

In compliance with Executive Order 13112 on invasive species, 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 would be taken if invasive species were found in or adjacent to the construction areas. Precautions include the inspection and cleaning of construction equipment. Eradication strategies would be used should an invasive species be discovered.

Appendix E Farmland Conversion Impact Rating

U.S. Department of Agriculture					
FARMLAND CONVERSION IMPACT RATING					
PART I (To be completed by Federal Agency)			Date Of Land Evaluation Request		
Name Of Project		Kiernan Road/SR-99 Interchange Reconstruction		Federal Agency Involved	
Proposed Land Use		Widened interestion		County And State	
		Stanislaus County, CA			
PART II (To be completed by NRCS)			Date Request Received By NRCS		
Does the site contain prime, unique, statewide or local important farmland? <i>(If no, the FPPA does not apply -- do not complete additional parts of this form).</i>			Yes	No	Acres Irrigated
			<input type="checkbox"/>	<input type="checkbox"/>	Average Farm Size
Major Crop(s)		Famable Land In Govt. Jurisdiction		Amount Of Farmland As Defined in FPPA	
		Acres: %		Acres: %	
Name Of Land Evaluation System Used		Name Of Local Site Assessment System		Date Land Evaluation Returned By NRCS	
PART III (To be completed by Federal Agency)			Alternative Site Rating		
			Site A	Site B	Site C
A. Total Acres To Be Converted Directly			4.5	4.4	
B. Total Acres To Be Converted Indirectly					
C. Total Acres In Site			4.5	4.4	0.0
					0.0
PART IV (To be completed by NRCS) Land Evaluation Information					
A. Total Acres Prime And Unique Farmland					
B. Total Acres Statewide And Local Important Farmland					
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted					
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value					
PART V (To be completed by NRCS) Land Evaluation Criterion					
Relative Value Of Farmland To Be Converted (Scale of 0 to 100 Points)					
			0	0	0
PART VI (To be completed by Federal Agency)					
Site Assessment Criteria (These criteria are explained in 7 CFR 658.5(b))		Maximum Points			
1. Area In Nonurban Use		15	4	4	
2. Perimeter In Nonurban Use		10	10	10	
3. Percent Of Site Being Farmed		20	20	20	
4. Protection Provided By State And Local Government		20	0	0	
5. Distance From Urban Builtup Area		15	0	0	
6. Distance To Urban Support Services		15	0	0	
7. Size Of Present Farm Unit Compared To Average		10	0	0	
8. Creation Of Nonfarmable Farmland		10	0	0	
9. Availability Of Farm Support Services		5	4	4	
10. On-Farm Investments		20	1	1	
11. Effects Of Conversion On Farm Support Services		10	0	0	
12. Compatibility With Existing Agricultural Use		10	2	2	
TOTAL SITE ASSESSMENT POINTS		160	41	41	0
					0
PART VII (To be completed by Federal Agency)					
Relative Value Of Farmland (From Part V)		100	0	0	0
Total Site Assessment (From Part VI above or a local site assessment)		160	41	41	0
TOTAL POINTS (Total of above 2 lines)		260	41	41	0
					0
Site Selected:			Date Of Selection		Was A Local Site Assessment Used?
					Yes <input type="checkbox"/> No <input type="checkbox"/>
Reason For Selection:					

(See Instructions on reverse side)
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List of Technical Studies that are Bound Separately

Draft Relocation Statement
Air Quality Report
Air Quality Conformity Analysis
Noise Study Report
Noise Abatement Decision Report
Water Quality Report (including Storm Water Data Report)
Natural Environment Study Minimal Impact
Floodplain Evaluation Report
Farmland Conversion Assessment
Historical Property Survey Report
Archaeological Survey Report
Initial Paleontology Study
Initial Site Assessment
Scenic Resource Evaluation/Visual Assessment
Traffic Operations Analysis Report
Visual Impact Report