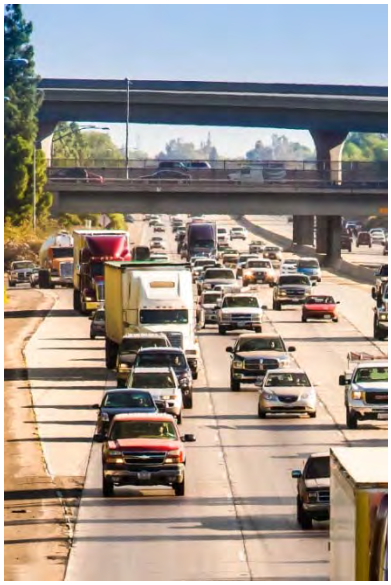
Centennial Corridor Project

City of Bakersfield and Kern County, CA
District 6 - KER - 58 - PM T31.7 to PM R55.6
District 6 - KER - 99 - PM 21.2 to PM 26.2

Project ID # 06-0000-0484

SCH #2008091102

Draft Environmental Impact Report/ Environmental Impact Statement and Section 4(f) Evaluation



Volume 1 of 2

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.

May 2014

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 Environmental Impact Report/Environmental Impact Statement, which examines the potential environmental impacts of the alternatives being considered for the project in Kern County, California. Caltrans is the lead agency under the National Environmental Policy Act and the California Environmental Quality Act. This two volume document tells you 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. This document will explain the rationale for the selection of Alternative B of Segment 1 as the Preferred Alternative. This first volume provides the primary analysis. The second volume contains the oversized (11 inch by 17 inch) figures, the Section 4(f) Evaluation, mapping of the alternatives, and various appendices.

What should you do?

- Please read this document. Additional copies of this document and the related technical studies are available for review at the Caltrans district office at 1352 West Olive Avenue, Fresno, California 93728 and at the locations listed below. The document can also be accessed electronically at the following websites: http://www.dot.ca.gov/dist6/environmental/envdocs/d6/ and http://www.bakersfieldfreeways.us

Thomas Roads Improvement Program Office 900 Truxtun Avenue, Suite 200 Bakersfield, CA 93301	Beale Memorial Library 701 Truxtun Avenue Bakersfield, CA 93301	Baker Branch Library 1400 Baker Street Bakersfield, CA 93305
County of Kern Planning Department 2700 M Street, Suite 100 Bakersfield, CA 93301-2370	Eleanor Wilson Branch Library 1901 Wilson Road Bakersfield, CA 93304	Holloway-Gonzales Branch Library 506 E. Brundage Lane Bakersfield, CA 93307
City of Bakersfield Planning Division 1715 Chester Avenue Bakersfield, CA 93301	Bryce C. Rathbun Branch Library 200 West China Grade Loop Bakersfield, CA 93308	
Kern Council of Governments 1401 19th Street, Suite 300 Bakersfield, CA 93301	Southwest Branch Library 8301 Ming Avenue Bakersfield, CA 93311	

- Attend the public hearing on June 11, 2014 located at: Kern County Administrative Center – Rotunda, 115 Truxtun Avenue, Bakersfield, California 93301 from 4:00 PM to 7:00 PM.
- We welcome your comments. If you have any concerns about the project, please attend the public hearing, or send your written comments to Caltrans by the deadline. Submit comments via U.S. mail to Caltrans at the following address:

  Jennifer H. Taylor
  Office Chief, Central Region
  Environmental Southern San Joaquin Valley
  California Department of Transportation, District 6
  855 M Street, Suite 200, Fresno, CA 93721

- Submit comments via email to: Centennial@dot.ca.gov
- Submit comments by the deadline: July 8, 2014.

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 project, 2) do additional environmental studies, or 3) abandon the project. If the project is given environmental approval and funding is disbursed, Caltrans could design and build all or part of the project.

Printing this document: To save paper, this document has been set up for two-sided printing (to print the front and back of a page). Blank pages occur where needed throughout the document to maintain proper layout of the chapters and appendices.

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: Department of Transportation, Attn: Ms. Jennifer H. Taylor, Office Chief, Central Region, Environmental Southern San Joaquin Valley, 855 M Street, Suite 200, Fresno, CA 93721; (888) 404-6375. Telecommunication Devices for the Deaf (TDD) users or individuals with a hearing or speech disability may contact the California Relay Services (TRS) to use a telephone system through a text phone (TTY) by dialing 711 from any telephone.

FHWA Highway ID No. NCIIP 5109(106)

SCH #2008091102
06 - KERN – 58 - PM T31.7 to PM R55.6
06 - KERN – 99 - PM 21.2 to PM 26.2
Project ID# 06-0000-0484

Construct a new alignment for State Route 58 to provide a continuous route along State Route 58 from Cottonwood Road (post mile R55.6) on existing State Route 58 (East), east of State Route 99 to Interstate 5 (post mile T31.7). Improve State Route 99 from Wilson Road (post mile 21.2) to Gilmore Avenue (post mile 26.2).

DRAFT ENVIRONMENTAL IMPACT REPORT /ENVIRONMENTAL IMPACT STATEMENT and Section 4(f) Evaluation

Submitted Pursuant to: (State) Division 13, California Public Resources Code (Federal) 42 U.S. Code 4332(2)(C), 23 U.S. Code 327, and 49 U.S. Code 303

THE STATE OF CALIFORNIA
Department of Transportation

4/28/2014
Date of Approval

Sharri Bender Ehlert
District Director
California Department of Transportation
National Environmental Policy Act Lead Agency
California Environmental Quality Act Lead Agency

The following person may be contacted for additional information about this document:

Jennifer H. Taylor
Office Chief, Central Region
Environmental Southern San Joaquin Valley
California Department of Transportation, District 6
855 M Street, Suite 200
Fresno, CA 93721
(888) 404-6375

Abstract: The purpose of the project is to provide continuity for traffic using State Route 58 in Kern County. Substantial environmental effects anticipated from the project include: biological resources; displacement of residences/businesses; potentially archaeological resources; historic resources/4(f) for alternative A; parkland/4(f) for alternatives A and C; potential hazardous waste/materials, potential to uncover/encounter significant fossils. Unavoidable adverse impacts anticipated, regardless of alternatives selected, include: aesthetics, community disruption, and noise

Comments on the Draft Environmental Impact Report/Environmental Impact Statement are due no later than July 8, 2014. Comments should be submitted to Ms. Jennifer H. Taylor at the address listed above or emailed to: Centennial@dot.ca.gov.

Summary

The California Department of Transportation (Caltrans), in cooperation with the City of Bakersfield, proposes to construct a new alignment for State Route 58 to provide a continuous route along State Route 58 from Cottonwood Road (post mile R55.6) on existing State Route 58 (East), east of State Route 99 to Interstate 5 (post mile T31.7). Improvements to State Route 99 from Wilson Road (post mile 21.2) to Gilmore Avenue (post mile 26.2) would also be required for the connection with State Route 58. The project is known as the Centennial Corridor. Caltrans is the lead agency for the project pursuant to both the California Environmental Quality Act and the National Environmental Policy Act.

Overview of Project Area

The project sits at the southern end of the San Joaquin Valley in the City of Bakersfield in Kern County, California. The project area is bound on the east by Cottonwood Road, on the west by Interstate 5, on the north by Gilmore Avenue, and on the south by Wilson Road.

Land uses in the project vicinity include residential, commercial, industrial, recreation, resource/utility, agriculture, undeveloped/vacant, and government. The eastern and central portions of the project area are more urban; the western portion is generally undeveloped or in agricultural production.

Purpose and Need

The purpose of the Centennial Corridor project is to provide route continuity and associated traffic congestion relief along State Route 58 within metropolitan Bakersfield and Kern County from the existing State Route 58 (East) (at Cottonwood Road) to Interstate 5.

State Route 58 is a critical link in the state transportation network and is used by interstate travelers, commuters, and a large number of trucks. State Route 58 lacks continuity in central Bakersfield, resulting in severe traffic congestion and reduced levels of service on adjoining highways and local streets. (The effectiveness of traffic operations on a transportation facility is measured in terms of “level of service”, an A through F scale with A being best and F being worst. This is further explained in Chapter 1.) This route is offset by about 2 miles at State Route 99 and by about 1 mile at State Route 43. The merging of two major state routes (58 and 99) into one alignment between the eastern and western legs of State Route 58 makes traffic worse on this segment of freeway. Also, State Route 99’s close spacing for its two interchanges with State Route 58 (east and west), in addition to an interchange at California Avenue, results in motorist lane changes that add to congestion.

Proposed Action

The proposed Centennial Corridor has been divided into three segments (see Figure S-1). The actions for the proposed project would be (1) route adoption/transfer

for a continuous route from the existing freeway portion of Route 58 east of State Route 99 to Interstate 5 with the western portion on existing Stockdale Highway from Heath Road to Interstate 5; and (2) approval for construction of Segment 1, improvements within Segment 2, and intersection improvements at the Stockdale Highway and State Route 43 (known locally as Enos Lane) intersection. The alternatives for Segment 1 are discussed below.

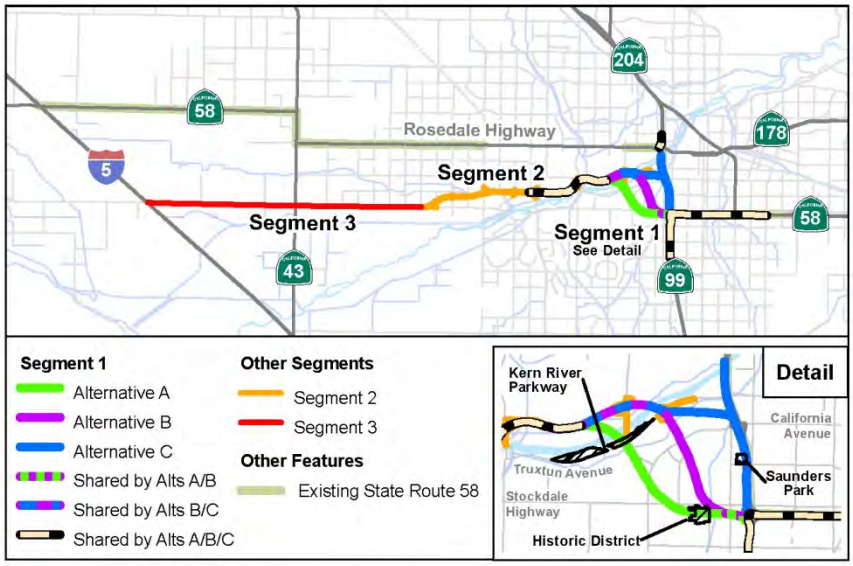


Figure S-1: Project Alternatives

Segment 1 is the easternmost segment that would connect a local roadway known as the Westside Parkway to the existing State Route 58 (East) freeway. This segment would construct a new section of freeway (which would be part of State Route 58) to provide the direct connection to Segment 2 (the Westside Parkway). In addition, the project would involve modifications to the existing State Route 58 (East) and State Route 99 to accommodate the new connection ramps. Three build alternatives and a No-Build Alternative are being evaluated for this segment. The three build alternatives are each proposed to be built as a four- to six-lane freeway; they are identified as Alternatives A through C. The alternatives are briefly described below:

- Alternative A runs westerly from the existing State Route 58 (East)/State Route 99 interchange for about 0.5 mile south of Stockdale Highway. Then it turns northwesterly and spans Stockdale Highway/Montclair Street, California Avenue/Lennox Avenue, Truxtun Avenue, and the Kern River before joining the east end of the Westside Parkway near the Mohawk Street interchange. Alternative A is about 8.2 miles long.
- Alternative B, which emerged as the preferred alternative, runs westerly from the existing State Route 58 (East)/State Route 99 interchange for about 1,200 feet, south of Stockdale Highway. Then it turns northwesterly and spans Stockdale Highway/Stine Road, California Avenue, Commerce Drive, Truxtun Avenue, and the Kern River before joining the east end of the Westside Parkway near the

Mohawk Street interchange. This alignment depresses the Centennial Corridor (the roadway would be lower than the existing ground level) between California Avenue and Ford Avenue. Overcrossings are proposed at Marella Way and La Mirada Drive to help traffic circulation. The option of removing the La Mirada Drive overcrossing and adding a Ford Avenue undercrossing with Alternative B is also under consideration. Alternative B is about 8.6 miles long.

- Alternative C turns north near the existing State Route 58 (East)/State Route 99 interchange, and runs parallel to the west of State Route 99 for about 1 mile. The freeway then turns west and spans the BNSF Railway rail yard, Truxtun Avenue, and the Kern River. This alternative proposes undercrossings at Brundage Lane, Oak Street, State Route 99, Palm Avenue, and California Avenue. Alternative C is about 8.7 miles long.
- The No-Build Alternative would not provide the connection from State Route 58 (East) to the Westside Parkway. None of the improvements in the State Route 58 corridor would be provided. Additionally, the minor intersection improvements in Segment 3 at Stockdale Highway and State Route 43 would not be constructed.

Segment 2 of the Centennial Corridor is composed of the Westside Parkway, which will ultimately extend from about Truxtun Avenue to Stockdale Highway near Heath Road. The final segment of the parkway from Allen Road to Stockdale Highway is currently under construction. The Westside Parkway would be incorporated into the State Highway System with each of the alternatives. Additionally, the current portion of State Route 58 (West) (Rosedale Highway) from Allen Road to Interstate 5 would be relinquished (made a local road, no longer a State highway) to the local jurisdictions (the City of Bakersfield and the County of Kern).

Each of the build alternatives in Segment 1 would require improvements to the Westside Parkway. The changes would be to several ramps and the medians to allow for auxiliary lanes. This would mostly be done within the existing right-of-way. Though technically these improvements are within Segment 2, they are required to accommodate Segment 1 to facilitate traffic operations between the Westside Parkway and the Centennial Corridor. The impacts associated with these improvements in Segment 2 are very minor since the area has already been disturbed for the construction of the Westside Parkway. Rather than split the impact analysis and have a separate impact discussion for Segment 2, any impacts associated with Segment 2 have been included in the impact discussion for Segment 1. However, because the connection with Segment 1 of the Centennial Corridor project would substantially increase traffic on the Westside Parkway (Segment 2), the traffic study prepared for this project analyzed the impacts across the proposed Centennial Corridor from Interstate 5 to Cottonwood Road. Similarly, the noise and air quality analyses were performed using the projected traffic volume for the Centennial Corridor and the analysis extended to cover the Westside Parkway (Segment 2).

Segment 3 traffic would use Stockdale Highway, a two-lane conventional roadway, to link to Interstate 5. To accommodate the additional traffic, improvements to the Stockdale Highway/State Route 43 intersection, such as a new signal and turn lanes, would be made. (State Route 43 is known locally as Enos Lane.) These improvements would be constructed at the same time as the Segment 1 improvements.

Freeway agreements approved by the County of Kern and the City of Bakersfield would also be required.

Preferred Alternative. Caltrans has preliminarily identified Alternative B as the preferred alternative. Alternative B is a feasible and prudent alternative that avoids impacts to Section 4(f) properties, such as parkland and historic properties. Therefore, after comparing and weighing the benefits and impacts of all of the feasible alternatives (Alternatives A through C), Caltrans has identified Alternative B as the preferred alternative, subject to public review. Final identification of a preferred alternative will occur after the public review and comment period. This is discussed in more detail in Section 2.1.4.

Joint California Environmental Quality Act/National Environmental Policy Act Document

The project is a joint project by Caltrans and the Federal Highway Administration, and is subject to state and federal environmental review requirements. Project documentation, therefore, has been prepared in compliance with both the California Environmental Quality Act and the National Environmental Policy Act. Caltrans is the lead agency for the project pursuant to both the California Environmental Quality Act and the National Environmental Policy Act. In addition, the Federal Highway Administration's responsibility for 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 Caltrans under its assumption of responsibility pursuant to 23 U.S. Code 327.

Some impacts determined to be significant under the California Environmental Quality Act may not lead to a determination of significance under the National Environmental Policy Act because the National Environmental Policy Act is concerned with the significance of the project as a whole.

Following receipt of comments from the public and reviewing agencies, a Final Environmental Impact Report/Environmental Impact Statement will be prepared. Caltrans may do additional environmental and/or engineering studies to address comments. The Final Environmental Impact Report/Environmental Impact Statement will include responses to comments received on the Draft Environmental Impact Report/Environmental Impact Statement and will identify the preferred alternative.

Following circulation of the final environmental document, if the decision is made to approve the project, Caltrans will certify that the project complies with the California Environmental Quality Act, prepare findings for all significant impacts identified, prepare a Statement of Overriding Considerations for impacts that will not be

mitigated below a level of significance, and certify that the findings and Statement of Overriding Considerations have been considered prior to project approval. Caltrans will then file a Notice of Determination with the State Clearinghouse that will state that the project will have significant impacts, whether mitigation measures were included as conditions of project approval, that findings were made, and that a Statement of Overriding Considerations was adopted. A Record of Decision will be published for compliance with the National Environmental Policy Act.

Project Impacts

For Segment 1, Alternatives A and C impact properties protected by Section 4(f) of the Department of Transportation Act of 1966 (49 U.S. Code 303). The full *Section 4(f) Evaluation* is contained in Volume 2, Appendix B. This requires the selection of a prudent and feasible alternative that avoids Section 4(f) properties, which is Alternative B. In addition Alternative C has Environmental Justice impacts (discussed later in this document).

Table S.1 provides a brief comparison of the impacts associated with the each of the three build alternatives and the No-Build (also called No-Action) Alternative.

Table S.1 Summary of Major Potential Impacts from Alternatives

Environmental Resource	Potential Impact			
	Segment 1 Alternative A	**Segment 1 Alternative B**	**Segment 1 Alternative C**	**No-Build Alternative**
Parks and Recreation	Displacement of 6.28 acres of the Kern River Parkway. This resource is protected by Section 4(f) of the Department of Transportation Act of 1966.	No impacts.	Displacement of 1.95 acres of developed and 1.32 acres of undeveloped portions of Saunders Park, totaling 3.27 acres. Replacement parkland and facilities would be provided. This resource is protected by Section 4(f) of the Department of Transportation Act of 1966.	No impacts.

Table S.1 Summary of Major Potential Impacts from Alternatives

Environmental Resource	Potential Impact			
	Segment 1 Alternative A	**Segment 1 Alternative B**	**Segment 1 Alternative C**	**No-Build Alternative**
Cultural Resources	Rancho Vista Historic District would be bisected requiring full take of 41 out of 81 of district contributing properties. This property is protected by Section 4(f) of the Department of Transportation Act of 1966. Possible uncover of archaeological materials during the construction period. Archaeological resources may be identified when subsurface testing of sensitive areas is conducted for the preferred alternative.	Rancho Vista Historic District would have an elevated structure and soundwalls to the north and east, and would cause an adverse effect (under Section 106 of the National Historic Preservation Act of 1966) due to it's impact on the historic setting. This property is also protected by Section 4(f) of the Department of Transportation Act of 1966 and implementation of this alternative would not result in a constructive use. Possible uncover of archaeological materials during the construction period. Archaeological resources may be identified when subsurface testing of sensitive areas is conducted for the preferred alternative.	No impacts to known historic properties. Possible uncover of archaeological materials during the construction period. Archaeological resources may be identified when subsurface testing of sensitive areas is conducted for the preferred alternative.	No impacts to architectural or archaeological resources.
Community Character and Cohesion	Substantial neighborhood disruption, including business and residential displacements; permanent street closures; and higher exposure to vehicle noise.	Substantial neighborhood disruption, including business and residential displacements; permanent street closures; and higher exposure to vehicle noise. Would divide an	Neighborhood disruption, including business and residential displacements; permanent street closures; and higher exposure to vehicle noise. Most residential displacements	No impacts.

Table S.1 Summary of Major Potential Impacts from Alternatives

Environmental Resource		Potential Impact			
		Segment 1 Alternative A	**Segment 1 Alternative B**	**Segment 1 Alternative C**	**No-Build Alternative**
			existing neighborhood.	would be in low income and minority neighborhoods (environmental justice communities).	
Relocation	Business displacements	127 businesses.	121 businesses.	198 businesses; including, 1 non-profit organization.	No impacts.
	Housing displacements	356 units	310 units	133 units	No impacts.
Traffic and Transportation/ Pedestrian and Bicycle Facilities		Would provide route continuity. **Deficient freeway segments** 0 in 2018 4 in 2038 **Deficient intersections** 26 in 2018 32 in 2038 122 parking spaces removed. **Pedestrian and Bicycle Facilities** Local roadways would be closed, but no Master Plan bike routes would be affected.	Would provide route continuity. **Deficient freeway segments** 0 in 2018 4 in 2038 **Deficient intersections** 26 in 2018 33 in 2038 146 parking spaces removed. **Pedestrian and Bicycle Facilities** This will require a realignment of a planned Class 3 bike route. Alternative routing would be available.	Would provide route continuity. **Deficient freeway segments** 0 in 2018 5 in 2038 **Deficient intersections** 24 in 2018 30 in 2038 142 parking spaces removed. **Pedestrian and Bicycle Facilities** Local roadways would be closed, but no Master Plan bike routes would be affected.	Discontinuity of east-west freeway in Bakersfield continued. **Deficient freeway segments** 4 in 2018 16 in 2038 **Deficient intersections** 25 in 2018 34 in 2038 No parking removed. **Pedestrian and Bicycle Facilities** No Master Plan bike routes would be affected.
Visual/Aesthetics		Long-term visual impacts on key viewpoints range from moderately low to moderately high. The presence of the elevated structure and soundwalls would, for some, result in obstructed views	Long-term visual impacts on key viewpoints range from moderately low to moderately high. The presence of the elevated structure and soundwalls would, for some, result in obstructed views	Long-term visual impacts on key viewpoints range from average to moderately high. The presence of the elevated structure and soundwalls would, for some, result in obstructed views that would	No impacts.

Table S.1 Summary of Major Potential Impacts from Alternatives

Environmental Resource	Potential Impact			
	Segment 1 Alternative A	**Segment 1 Alternative B**	**Segment 1 Alternative C**	**No-Build Alternative**
	that would adversely affect the visual character of the suburban neighborhoods. The freeway that runs through the neighborhood would change the visual character of the area.	that would adversely affect the visual character of the suburban neighborhoods. The freeway that runs through the neighborhood would change the visual character of the area.	adversely affect the visual character of the suburban neighborhoods.	
Air Quality	The project would not cause a new violation or contribute to a violation of standards, and project-level carbon monoxide conformity would be satisfied. Predicted concentrations of carbon monoxide are estimated to be less than 50 percent of the applicable standards. Predicted concentrations of 24-hour average particulate matter (PM_{10}) and annual average fine particulate matter ($PM_{2.5}$) would be within applicable federal standards and conformity would be satisfied. Predicted concentrations of 24-hour average fine particulate matter ($PM_{2.5}$) would not exceed no-build concentrations and conformity	The project would not cause a new violation or contribute to a violation of standards, and project-level carbon monoxide conformity would be satisfied. Predicted concentrations of carbon monoxide are estimated to be less than 50 percent of the applicable standards. Predicted concentrations of 24-hour average particulate matter (PM_{10}) and annual average fine particulate matter ($PM_{2.5}$) would be within applicable federal standards and conformity would be satisfied. Predicted concentrations of 24-hour average fine particulate matter ($PM_{2.5}$) would not exceed no-build concentrations and conformity	The project would not cause a new violation or contribute to a violation of standards, and project-level carbon monoxide conformity would be satisfied. Predicted concentrations of carbon monoxide are estimated to be less than 50 percent of the applicable standards. Predicted concentrations of 24-hour average particulate matter (PM_{10}) and annual average fine particulate matter ($PM_{2.5}$) would be within applicable federal standards and conformity would be satisfied. Predicted concentrations of 24-hour average fine particulate matter ($PM_{2.5}$) would not exceed no-build concentrations and conformity	Inconsistent with the long-term air quality plans (Regional Transportation Plan). No construction impacts.

Table S.1 Summary of Major Potential Impacts from Alternatives

Environmental Resource	Potential Impact			
	Segment 1 Alternative A	**Segment 1 Alternative B**	**Segment 1 Alternative C**	**No-Build Alternative**
	would be satisfied. There would be a decrease in 2018 and 2038 Mobile Source Air Toxics emissions compared to 2008 levels. The decrease is primarily due to the improved pollutant emission performance resulting from federal and state rules for cleaner fuel and cleaner engines and fleet turnover. For the study area as a whole, the Mobile Source Air Toxics emissions in 2018 and 2038 would be higher than with the No-Build Alternative, except for diesel particulate matter in 2018, which would be less than with the No-Build Alternative.	would be satisfied. There would be a decrease in 2018 and 2038 Mobile Source Air Toxics emissions compared to 2008 levels. The decrease is primarily due to the improved pollutant emission performance resulting from federal and state rules for cleaner fuel and cleaner engines and fleet turnover. For the study area as a whole, the Mobile Source Air Toxics emissions in 2018 and 2038 would be higher than with the No-Build Alternative.	would be satisfied. There would be a decrease in 2018 and 2038 Mobile Source Air Toxics emissions compared to 2008 levels. The decrease is primarily due to the improved pollutant emission performance resulting from federal and state rules for cleaner fuel and cleaner engines and fleet turnover. For the study area as a whole, the Mobile Source Air Toxics emissions in 2018 and 2038 would be higher than with the No-Build Alternative.	With the No-Build Alternative, the Mobile Source Air Toxics emissions in 2018 and 2038 would be lower for the study area as a whole, when compared to the build alternatives.
Noise	There are 532 frequent outdoor use areas affected; 19 recommended feasible and reasonable soundwalls would provide feasible abatement for 461 frequent outdoor use areas.	There are 484 frequent outdoor use areas affected; 24 feasible and reasonable recommended soundwalls as well as one feasible but not reasonable recommended soundwall would provide feasible abatement for 408 frequent outdoor use areas.	There are 401 frequent outdoor use areas affected; 17 recommended feasible and reasonable soundwalls would provide feasible abatement for 325 frequent outdoor use areas.	There would be 336 frequent outdoor use areas that would approach the Noise Abatement Criteria with no abatement provided in 2038.

Table S.1 Summary of Major Potential Impacts from Alternatives

Environmental Resource	Potential Impact			
	Segment 1 Alternative A	**Segment 1 Alternative B**	**Segment 1 Alternative C**	**No-Build Alternative**
		One soundwall is feasible but not reasonable; however, since this soundwall would close a gap in soundwalls, it is recommended to minimize noise impacts to 4 frequent outdoor use areas.		
Natural Communities	Removal of 95.38 acres (24.44 permanent; 70.94 temporary) of vegetation.	Removal of 76.83 acres (11.28 permanent; 65.55 temporary) of vegetation.	Removal of 72.49 acres (10.24 permanent; 62.25 temporary) of vegetation.	No impacts.
Threatened and Endangered Species	Affects 95.38 acres of foraging habitat for the Swainson's hawk. Affects 95.38 acres of habitat and 1 active den for the San Joaquin kit fox.	Affects 76.83 acres of foraging habitat for the Swainson's hawk. Affects 76.83 acres of habitat and 3 potential dens for the San Joaquin kit fox.	Affects 72.49 acres of foraging habitat for the Swainson's hawk. Affects 72.49 acres of habitat and 1 potential den for the San Joaquin kit fox.	No Impacts.
Wetlands and Other Waters	3.54 acres (0.35 acre permanent, 3.19 acres temporary) of riparian habitat affected.7.23 acres (1.20 acres permanent, 6.03 acres temporary) of U.S. Army Corps of Engineers jurisdiction affected.17.60 acres (4.67 acres permanent, 12.93 acres temporary) of California Department of Fish and Wildlife jurisdiction affected.	1.06 acres temporary of riparian habitat affected. 5.54 acres (1.00 acre permanent, 4.54 acres temporary) of U.S. Army Corps of Engineers jurisdiction affected. 7.74 acres (1.42 acres permanent, 6.32 acres temporary) of California Department of Fish and Wildlife jurisdiction affected.	1.42 acres temporary of riparian habitat affected. 7.42 acres (0.74 acre permanent, 6.68 acres temporary) of U.S. Army Corps of Engineers jurisdiction affected. 10.26 acres (0.95 acre permanent, 9.31 acres temporary) of California Department of Fish and Wildlife jurisdiction affected.	No impacts.

Coordination with the Public and Other Agencies

Caltrans, in cooperation with the City of Bakersfield, has coordinated with numerous public agencies throughout the environmental process. A Notice of Intent/Notice of Preparation was prepared to announce the start of the Environmental Impact Report/Environmental Impact Statement.

On September 18, 2008, a Notice of Intent/Notice of Preparation was sent to federal, state, regional, and local government agencies, Native American groups, business groups, and other interested parties. These groups were also invited to the scoping meeting on October 2, 2008. A separate agency scoping meeting was held the afternoon of October 2, 2008, prior to the public scoping meeting held that evening.

Caltrans prepared a coordination plan that identifies the various efforts for public and agency involvement during the environmental review process.

Permits Required for the Project

A number of permits and approvals would be required for project construction. Table S.2, below, provides a list of the agencies for which permits or approvals may be required depending on the Segment 1 alternative ultimately identified to move forward.

Table S.2 Project Permits and Approvals

Agency	Permit/Approval	Status
U.S. Fish and Wildlife Service	Section 7 Consultation, as required by the Endangered Species Act for the San Joaquin kit fox	Caltrans was able to initiate the process because the U.S. Fish and Wildlife Service agreed to accept a Biological Assessment that evaluated all three alternatives. The Biological Assessment was submitted to the U.S. Fish and Wildlife Service on April 16, 2013 and formal consultation was initiated on July 22, 2013. A Biological Opinion from the Service on the effects on the San Joaquin kit fox was issued on December 20, 2013.
Federal Emergency Management Agency	Conditional Letter of Map Revision and Letter of Map Revision	During the design phase of the project, coordination with the Federal Emergency Management Agency would be required to ensure there are no improvements that are incompatible with the floodplain.
U.S. Army Corps of Engineers	Section 404 Permit pursuant to the Clean Water Act for filling or dredging “Waters of the United States”	Concurrence on the type of permit or change to the existing permit issued for construction of the Westside Parkway would be required before construction of Centennial Corridor begins.
Federal Highway Administration	Air Quality Conformity Determination	Before approval of the final environmental document, the Federal Highway Administration must make a finding that the project is consistent with the requirements of the Clean Air Act.
California Department of Fish and Wildlife	Section 1602 Agreement for Streambed Alteration pursuant to Section 1600 of the *California Fish and Game Code*	Caltrans will need to finalize a 1602 Agreement before construction begins.

Table S.2 Project Permits and Approvals

Agency	Permit/Approval	Status
California Transportation Commission	Route Adoption	After approval of the final environmental document, the California Transportation Commission would be required to approve the route adoption for State Route 58. If a new alignment is selected, the current alignment from Allen Road to Interstate 5 would be relinquished to the local jurisdictions.
State Historic Preservation Officer	Memorandum of Agreement	Caltrans initiated consultation with the State Historic Preservation Officer on February 15, 2013, regarding determinations of National Register eligibility, with their concurrence on April 15, 2013. A Finding of Effect on historic properties for the preferred alternative was submitted to the State Historic Preservation Officer for review on March 13, 2014, with comments received on April 10, and 18, 2014. Consultation with the State Historic Preservation Officer focused on planned identification efforts for potential buried archaeological sites, and an adverse effect determination to the Rancho Vista Historic District from introduction of an elevated structure and soundwalls on the north and east edge of the district. A Memorandum of Agreement will be completed during the public comment period on the Draft EIR/EIS.
California Transportation Commission, Caltrans and the City of Bakersfield	Transfer Agreement	The City of Bakersfield and Caltrans would enter into an agreement to transfer the Westside Parkway to the state to be designated as State Route 58. This would require the City Council and the California Transportation Commission to adopt the agreement. Coordination with the commission would occur once the project has been approved.
	Freeway Agreement	A freeway agreement which specifies the planned traffic circulation features of the proposed facility will be developed once the project is approved.
Caltrans and the City of Bakersfield	Cooperative Agreement (construction phase)	A cooperative agreement between Caltrans and the City of Bakersfield outlining their respective responsibilities for project implementation would be executed before construction begins.
	Agreement for Park Use and Modification	Caltrans and the City have coordinated on improvements required to the local park facilities to offset any effects from the project. An agreement would be drafted once the project has been approved. The details of the agreement would be included in the final environmental document.
	Maintenance Agreement	An agreement between Caltrans and the City of Bakersfield would identify responsibility for maintenance of enhanced aesthetic features, including graffiti removal.
Caltrans and the County of Kern	Maintenance Agreement	An agreement between Caltrans and the County of Kern would identify responsibility for maintenance of the intersection improvements at Stockdale Highway and State Route 43.

Table S.2 Project Permits and Approvals

Agency	Permit/Approval	Status
City of Bakersfield	Encroachment Permits Relinquishment of street right-of-way Update General Plan	The City of Bakersfield would need to issue encroachment permits to allow the contractor to change local streets within the City jurisdiction. For those roadways that are being realigned, closed, or made into cul-de-sacs, the City would need to relinquish the roadway right-of-way. Once the State Highway System is changed, the updated plan should be reflected in the local General Plan and, a change to the Master Plan of Bikeways would be required for Alternative B.
County of Kern	Encroachment Permit Update General Plan	The County of Kern would need to issue encroachment permits to allow the contractor to change local streets within the County of Kern jurisdiction. Once the State Highway System is changed, the updated plan should be reflected in the local General Plan.
State Water Resources Control Board and the Central Valley Regional Water Quality Control Board, Region 5	Storm Water Discharge Permit National Pollutant Discharge Elimination System Coordination	Compliance with (1) the Statewide National Pollutant Discharge Elimination System Permit for Storm Water Discharge from the State of California, Department of Transportation Properties, Facilities, and Activities (Order Number 2012-0011-DWQ, NPDES No. CAS000003) and (2) the National Pollutant Discharge Elimination System General Permit for Storm Water Discharge Requirements for Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ, NPDES No. CAS000002, as amended by 2010-0014-DWQ).
	Section 401 Certification pursuant to the Clean Water Act	Certification of compliance would be obtained before construction.
	Discharge of Construction Water (Dewatering)	If dewatering is expected for the preferred alternative, the contractor must fully conform to the requirements specified in Order No. R5-00-175, General Waste Discharge Requirements for Discharges to Surface Water which Pose an Insignificant (*De Minimus*) Threat to Water Quality, from the Central Valley Regional Water Quality Control Board.
	Municipal Separate Storm Sewer System Permit	The Central Valley Regional Water Quality Control Board has issued waste discharge requirements for the County of Kern and the City of Bakersfield for urban storm water discharges (Order No. 5-01-130, National Pollutant Discharge Elimination System No. CA00883399). During subsequent design phases, the latest version of the Storm Water Management Plan/Standard Urban Storm Water Mitigation Plan developed and implemented by the County of Kern and the City of Bakersfield must be evaluated to determine which requirements apply to a road and highway project such as the Centennial Corridor.

Table S.2 Project Permits and Approvals

Agency	Permit/Approval	Status
San Joaquin Valley Air Pollution Control District	Dust Control Permit and Approved Air Impact Assessment per Rule 9510, Indirect Source Review Rule 8210, Limits to fugitive particulate matter emissions during construction activities	Coordination at a staff level has occurred as part of preparation of the Air Quality Study Report. The permit would be acquired after project approval and before construction.
Public Utilities Commission	Relocation of the electrical transmission towers would require Public Utilities Commission authorization	Coordination with Public Utilities Commission staff would be required as part of the design effort for the relocation of the electrical transmission towers. No coordination with the commission or the utility company has occurred to date. Coordination would begin during the design phase of the project.
	Approval for the construction of new or modification of existing, highway-rail crossings (General Order 88B and 26D) (Alternative C)	Coordination has not begun with the Public Utilities Commission. This coordination would occur if Alternative C is selected as the preferred alternative.
California Department of Conservation, Department of Oil, Gas, and Geothermal Resources	Abandonment of oil wells would need to be done in compliance with Department of Conservation requirements	Coordination has not begun. Before construction, a Notice of Intent would be filed with the Department of Conservation, Division of Oil, Gas and Geothermal Resources, and an abandonment plan would be prepared for all oil wells that would be abandoned.
BNSF Railway, Union Pacific Railroad, and San Joaquin Valley Railroad	Acquisition of right-of-way or easement and changes to existing agreements for work in the rail corridor	Coordination with the railroad would occur prior to construction.
Central Valley Flood Protection Board	Approval of flood control improvements and floodplain encroachment	Coordination would begin during the design phase of the project.

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List of Abbreviated Terms

ADA	Americans with Disabilities Act
Alt.	Alternative
AT&T	American Telephone and Telegraph
Caltrans	California Department of Transportation
CFR	Code of Federal Regulations
CH_4	Methane
CO	Carbon monoxide
CO_2	Carbon dioxide
dB	Decibels
dBA	A-weighted decibels
DPM	Diesel Particulate Matter
et seq.	and the following
H_2S	Hydrogen sulfide
HFCs	Hydrofluorocarbons
HFC-23	Fluoroform
HFC-134a	s, s, s, 2-tetrafluoroethane
HFC-152a	Difluoroethane
LED	Light-emitting diode
L_{eq}	Sound Energy Equivalent Noise Level
MAP-21	Moving Ahead for Progress in the 21st Century Act
MFR	Multi-family residence
MH	Mobile home
N_2O	Nitrous oxide
NO_2	Nitrogen dioxide
NOx	Oxides of nitrogen
O_3	Ozone

Pavley	Assembly Bill 1493
Pb	Lead
Perm	Permanent
PG&E	Pacific Gas and Electric
PM2.5	Particulate matter equal to or less than 2.5 microns in diameter
PM10	Particulate matter equal to or less than 10 microns in diameter
Ppm	Parts per million
SAFETEA-LU	Safe Accountable, Flexible Efficient Transportation Equity Act: A Legacy for Users
SCH	State Clearinghouse
SF_6	Sulfur hexafluoride
SFR	Single-family residence
SO_2	Sulfur dioxide
TRIP	Thomas Roads Improvement Program
U.S.	United States
U.S. Code	United States Code
USFWS	U.S. Fish and Wildlife Service
VRP	Visibility-reducing particles
$\mu g/m^3$	Micrograms per cubic meter

Chapter 1 Purpose and Need for the Project

1.1 Introduction

The California Department of Transportation (Caltrans), in cooperation with the City of Bakersfield, proposes the construction of the Centennial Corridor as a new east-west transportation corridor for State Route 58. Centennial Corridor would provide route continuity for State Route 58 by building a new freeway segment linking State Route 58 (East) with Interstate 5. To accommodate the new freeway segment, improvements on State Route 99 would also be constructed.

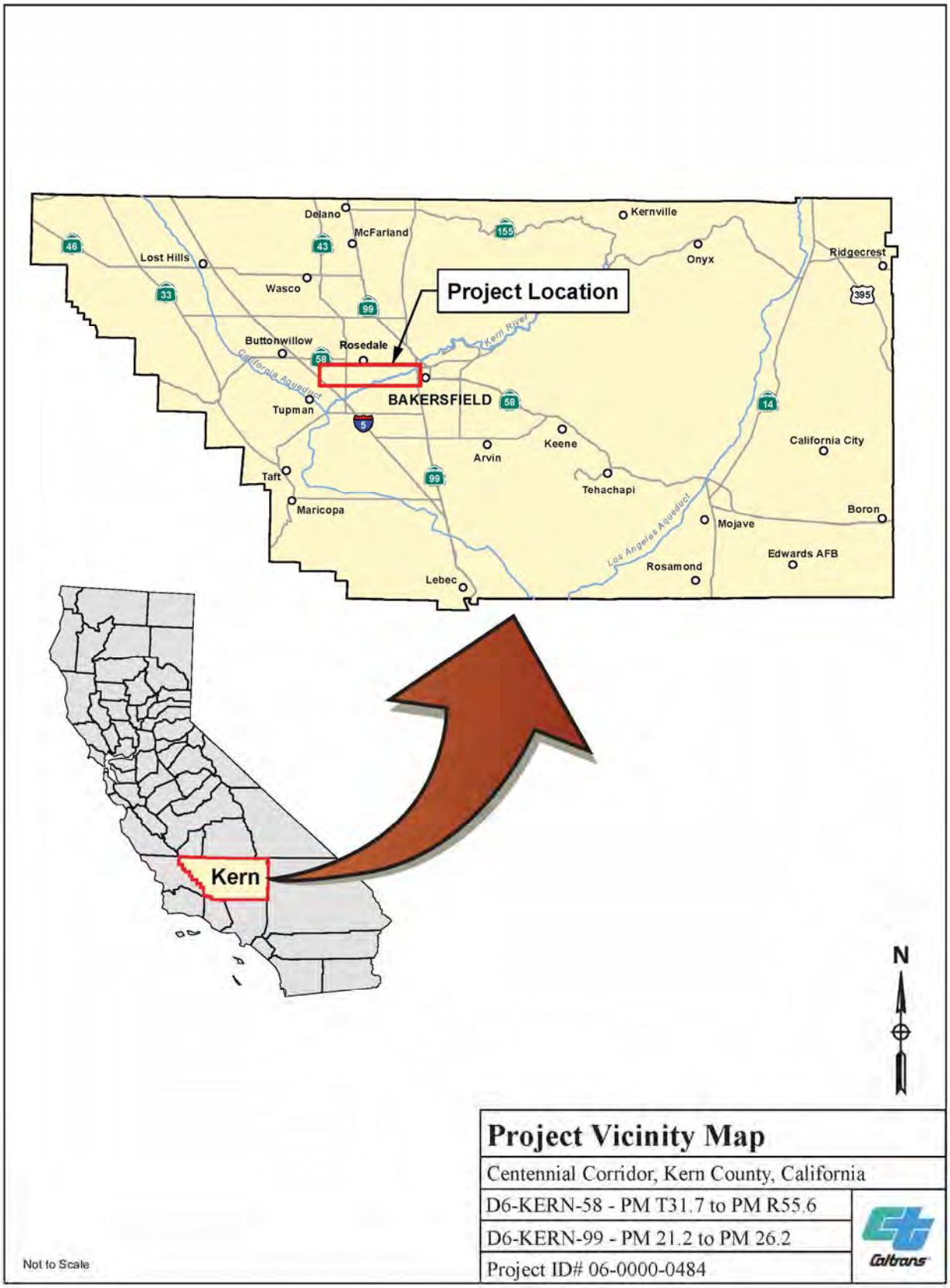
A route adoption (formal alignment selection) by the California Transportation Commission would be needed once the alignment is identified for a continuous route for State Route 58 from east of State Route 99 to Interstate 5. This could also involve the "transfer" of an existing roadway (the Westside Parkway) into the State Highway System. The current portion of State Route 58 (West) from Allen Road to Interstate 5 would be relinquished (made a local road, no longer a State highway) to the local jurisdictions (the City of Bakersfield and the County of Kern). Freeway agreements approved by the County of Kern and the City of Bakersfield would also be required.

The project is subject to both state and federal environmental review requirements because it involves the use of federal funds from the Federal Highway Administration. Project documentation has been prepared in compliance with both the California Environmental Quality Act and the National Environmental Policy Act. Caltrans is the lead agency under both the California Environmental Quality Act and the National Environmental Policy Act.

Project Location and Setting

The project sits at the southern end of the San Joaquin Valley in the city of Bakersfield in Kern County, California. The project area is bound on the east by Cottonwood Road, on the west by Interstate 5, on the north by Gilmore Avenue, and on the south by Wilson Road (see Figures 1-1 and 1-2).

The city of Bakersfield is a major urban area, with the ninth highest population in the state. Land uses in the project vicinity include residential, commercial, industrial, recreation, resource/utility, agriculture, undeveloped/vacant, and government. The eastern and central portions of the project area are more urbanized; the western portion is generally undeveloped or in agricultural production.



Project Vicinity Map

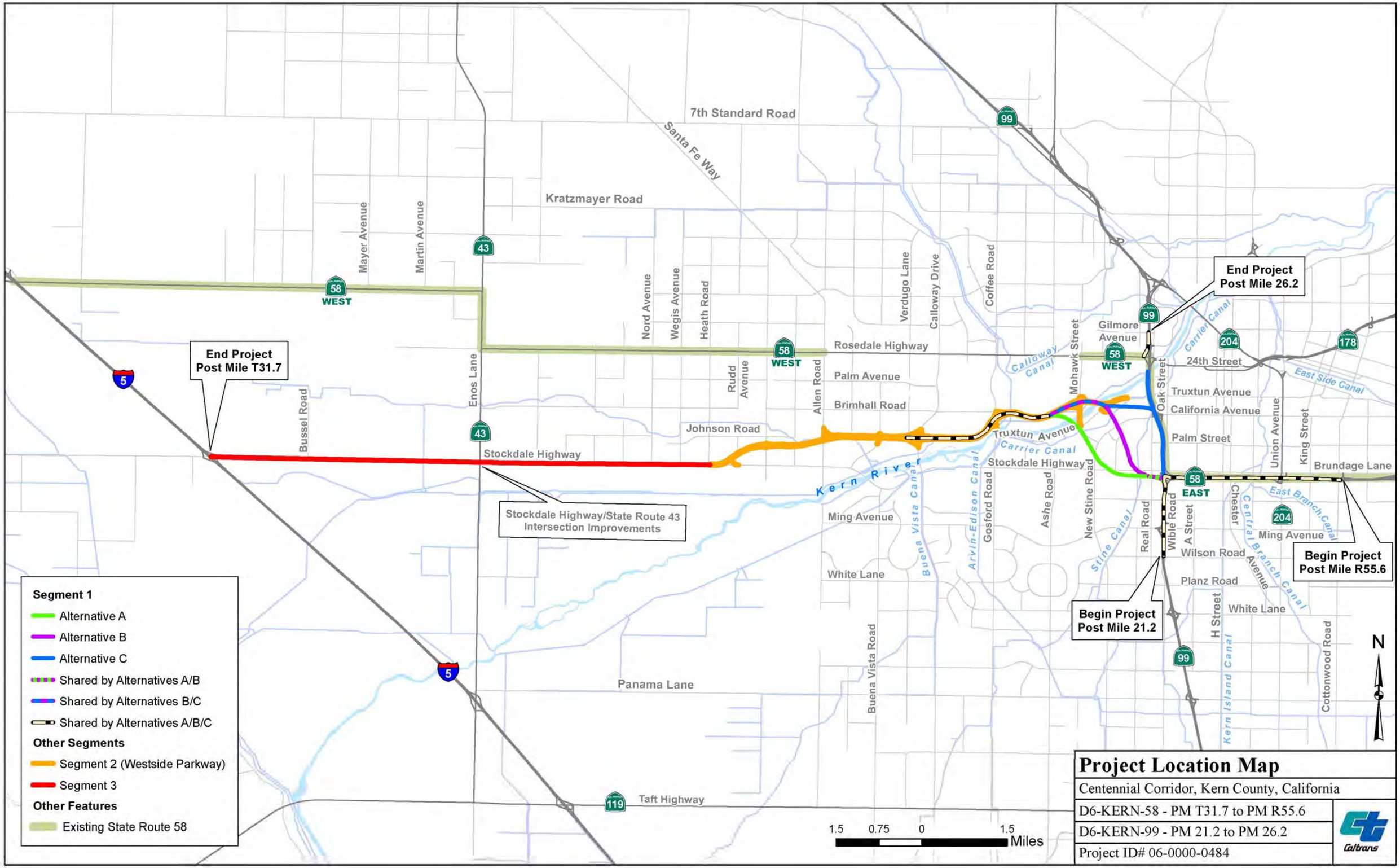
Centennial Corridor, Kern County, California

D6-KERN-58 - PM T31.7 to PM R55.6

D6-KERN-99 - PM 21.2 to PM 26.2

Project ID# 06-0000-0484

Figure 1-1


7th Standard Road
Santa Fe Way
Kratzmayer Road
Mayer Avenue
Martin Avenue
Nord Avenue
Wegis Avenue
Heath Road
Verdugo Lane
Calloway Drive
Coffee Road
Rosedale Highway
Palm Avenue
Brimhall Road
Rudd Avenue
Allen Road
Johnson Road
Bussel Road
Enos Lane
Stockdale Highway
Stockdale Highway/State Route 43 Intersection Improvements
End Project Post Mile T31.7
End Project Post Mile 26.2
Begin Project Post Mile R55.6
Begin Project Post Mile 21.2
Gilmore Avenue
24th Street
Truxtun Avenue
California Avenue
Palm Street
Brundage Lane
Mohawk Street
Oak Street
Union Avenue
King Street
Chester
Wible Road
A Street
Real Road
New Stine Road
Ashe Road
Gosford Road
Arvin-Edison Canal
Buena Vista Canal
Buena Vista Road
Kern River
Ming Avenue
White Lane
Wilson Road
Planz Road
H Street
Avenue
Panama Lane
Taft Highway
Calloway Canal
Carrier Canal
East Side Canal
East Branch Canal
Central Branch Canal
Stine Canal
Kern Island Canal
Cottonwood Road
5
43
58 WEST
58 EAST
99
204
178
119
N
1.5 0.75 0 1.5 Miles
Segment 1
Alternative A
Alternative B
Alternative C
Shared by Alternatives A/B
Shared by Alternatives B/C
Shared by Alternatives A/B/C
Other Segments
Segment 2 (Westside Parkway)
Segment 3
Other Features
Existing State Route 58
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Centennial Corridor, Kern County, California
D6-KERN-58 - PM T31.7 to PM R55.6
D6-KERN-99 - PM 21.2 to PM 26.2
Project ID# 06-0000-0484
Caltrans

Figure 1-2

Planning Background

The need for a high-capacity transportation corridor in western Kern County has been recognized by local and regional planners for decades. The 2001 *Route 58 Route Adoption Project Tier 1 Environmental Impact Statement/Environmental Impact Report* focused on the location of a transportation corridor to replace existing State Route 58 in the future. The Tier 1 study documented previous transportation planning studies and analyzed many different alternatives from State Route 58 (East) to Interstate 5. A major result of the Tier 1 effort was the selection of the Cross Valley Canal alignment as the preferred alternative at that time. However, between 2001 and 2013 an action to consider a Route Adoption by the California Transportation Commission has not yet occurred, but may occur upon completion of the final environmental document.

The 2007 *Tier 2 Westside Parkway Environmental Assessment/Final Environmental Impact Report* was prepared to evaluate the construction-level impacts of the first phase of the transportation project identified along the Tier 1 Cross Valley Canal alignment preferred alternative. Westside Parkway, which extends west from Truxtun Avenue near Mohawk Street to Stockdale Highway at Heath Road, builds on the previously identified Tier 1 alignment by providing a major link toward route continuity for State Route 58. Construction of Segment 1 of the Centennial Corridor would provide the next logical step in implementing the ongoing plan for improving route continuity and connectivity for State Route 58. This environmental document is not a tiered document of the 2001 *Route 58 Route Adoption Project Tier 1 Environmental Impact Statement/Environmental Impact Report.*

The Centennial Corridor project is included in the 2011 Regional Transportation Plan Amendment 3 (Project Identification Number KER08RTP020). The Kern Council of Governments adopted the 2011 plan on July 19, 2012. The Federal Highway Administration and Federal Transit Administration made a conformity finding for the 2011 plan on December 13, 2012. Segments 1 and 2 are in the Kern Council of Governments' 2013 Federal Transportation Improvement Program, which was federally approved on December 13, 2012 (Project Identification Numbers KER050109, KER080110, KER020102, KER080103, KER080105, KER080107, KER990112 and KER050104).

Funding for the project comes from multiple sources, including SAFETEA-LU, which is federal legislation that was signed into law on August 10, 2005. The following funding sources have been identified:

- SAFETEA-LU Section 1301 = $90.44 million
- SAFETEA-LU Section 1302 = $289.2 million
- Other federal sources = $12.97 million
- State = $53 million
- Kern County bond = $57.5 million
- City of Bakersfield = $206.89 million

1.2 Purpose and Need

The purpose and need provide the reasons the project is being considered. They also form the basis for comparing the alternatives so that, when an alternative is selected for construction, not only are the environmental impacts considered but so is the alternative's ability to meet the project's intended objectives.

1.2.1 Purpose

The purpose of the Centennial Corridor project is to provide route continuity and associated traffic congestion relief along State Route 58 within metropolitan Bakersfield and Kern County from State Route 58 (East) (at Cottonwood Road) to Interstate 5.

The American Association of State Highway and Transportation Officials (AASHTO) *A Policy on Geometric Design of Highways and Streets* (2004) defines route continuity as a roadway throughout the length of a designated route. The goal of route continuity is to ease the driving task by reducing the need to change lanes and search for directional signing. Route continuity is evaluated in terms of consistent levels of service by providing an appropriate number of lanes to ease movement.

1.2.2 Need

State Route 58 is a critical link in the state transportation network and is used by interstate travelers, local commuters within metropolitan Bakersfield, and a great number of regional and inter-regional trucks. However, the efficient movement of traffic, goods, and materials through the metropolitan Bakersfield and incorporated areas is limited by the existing transportation network.

Route Continuity

State Route 58 is not continuous; it lacks route continuity from the State Route 58 (East)/State Route 99 interchange west to Interstate 5. From the State Route 58 (East)/99 interchange, State Route 58 is offset by about 2 miles where State Routes 58 and 99 merge and share a common north-south alignment. Along this shared portion, State Route 58/99 is an eight-lane, access-controlled (access is limited to interchanges) freeway. This section of State Route 99 between State Route 58 (East) and Airport Drive is the third most congested segment of the highway in California. Regional and inter-regional traffic, including heavy trucks, merge with local traffic using this segment to access metropolitan Bakersfield.

Traffic continuing west from the shared portion of State Route 58/State Route 99 must exit at the State Route 178/24th Street off-ramp to access State Route 58 (West) where the route resumes as an east-west local road known as Rosedale Highway. State Route 58 (West) extends west for about 12 miles from State Route 99 to State Route 43. From State Route 99 west to Allen Road, State Route 58 (West) is a four-lane, divided local road with a posted 45 mile-per-hour speed limit and traffic signals at all major intersections. In June 2012, Caltrans relinquished the portion of State Route 58 (West) between Allen Road to Mohawk Street (post miles 45.96 to 50.61) to the City of Bakersfield and the County of Kern.

At State Route 43 (locally known as Enos Lane), State Route 58 (West) is again offset to the north for about 1 mile and shares the alignment with State Route 43. From this point, State Route 58 (West) again assumes an east-west alignment as a two-lane, rural conventional roadway for about 8 miles, to the interchange with Interstate 5.

The lack of route continuity contributes to traffic congestion and reduced levels of service on adjoining highways and local streets. As stated in the 2001 *Route 58 Route Adoption Project Tier 1 Environmental Impact Statement/Environmental Impact Report* (page 1-1), "The lack of continuity at State Route 99 contributes to traffic congestion on that freeway. State Route 99 has large volumes of traffic because it is the major Central Valley connector in California and is the only major north-south freeway in Bakersfield, and it also functions as a major commuter route for the metropolitan area. State, regional and local east-west traffic using State Route 58 contributes to the already substantial volume of traffic using State Route 99 where both state routes share a common roadway." Under existing conditions, State Route 58 does not meet the capacity needs of the area, and this is expected to get worse as the population grows. The existing capacity of State Route 58, both eastbound and westbound, is constrained by the system interchange ramps at State Route 99 and Real Road. Currently these ramps are operating at level of service E/F during peak hours. These conditions will worsen (or deteriorate) with the widening of State Route 99 from Taft Highway to Wilson Road and several future projects which include widening Rosedale Highway from four lanes to six lanes and the widening 24th Street from four to six lanes (see the Traffic Study Report for the Centennial Corridor Project). The widening of State Route 58 east of State Route 99 and construction of the Centennial Corridor connection is needed to meet future population and employment growth in the Bakersfield metropolitan area and to accommodate forecasted growth in interregional traffic movements in the State Route 58, State Route 99 and I-5 travel corridors.

The metropolitan Bakersfield forecast annual growth rate (2010-2035) is 1.8 percent. In the area east of State Route 99, three highways (State Route 204, State Route 178, and State Route 58) provide a well-developed road system to handle the large volume of local traffic movement. There are no access-controlled thoroughfares in the metropolitan area west of State Route 99 to support growth. The stop- and signal-controlled local road network west of State Route 99 adds to commute times and provides lower levels of service.

Another factor limiting route continuity is the Kern River, which creates a barrier for traffic movement. The Kern River splits the metropolitan Bakersfield area and creates a barrier for traffic movement. Only a few routes—such as Olive Drive, Stockdale Highway, and Rosedale Highway/24th Street—span the river and carry traffic in an east-west direction. This results in high traffic volumes: traffic is funneled across the Kern River using those few routes that span the river. State Route 99 contributes to this because it also attracts some local north-south traffic crossing the river.

A more technical analysis of the issues identified above is provided below. The next two sections provide details on existing and future east-west traffic congestion and traffic conditions on the shared portion of State Route 58 and State Route 99.

Existing East-West Traffic Congestion and Projected Demand

The Interregional Transportation Strategic Plan was developed by Caltrans to guide development of the interregional transportation system. The Interregional Transportation Strategic Plan identifies State Route 58 as a high-capacity, high level of service, east-west facility that provides significant goods and freight movement connections between Interstate 5 and State Route 99 in the San Joaquin Valley.

Sitting at the southern end of the San Joaquin Valley, Kern County has convenient access to both the Los Angeles Basin and the San Francisco Bay area. As a result, Kern County is developing as an important regional center for distribution of goods and materials through the state. In addition, the manufacturing and employment base of the San Joaquin Valley is increasing. These factors contribute to increasing demand for freight transportation in the greater Bakersfield region.

Truck traffic accounts for 27 percent of the total traffic in Kern County. This is three times the statewide average of 9 percent. Surveys identified that even the existing State Route 58 West (Rosedale Highway), which is built as a local roadway, has truck traffic percentages of up to 16 percent of total traffic. The Caltrans *State Route 58 Corridor System Management Plan* (2011) projects that goods movement is expected to continue to increase over the next several years, creating a need to develop State Route 58 as a primary east-west route. At a regional scale, the project would promote economic growth and interregional/intraregional trade by improving linkages between existing segments of the State Highway System through Bakersfield.

Users of State Route 58 (West)/Rosedale Highway currently experience travel delays from stop- and signal-controlled local streets. This is especially true on the 12-mile segment between State Route 43 (Enos Lane) and State Route 99, which has 18 signal or four-way stop intersections. The projected level of service indicates that delay will get worse in the future conditions. With ongoing and future access, congestion, and continuity issues along State Route 58, there is a well-recognized need for highway improvements. This statement is supported by the information described under "Traffic Congestion on the Shared Portion of State Route 58 and State Route 99" subsection provided later in this Chapter.

The effectiveness of traffic operations on a transportation facility is measured in terms of "level of service," in a range from A to F, with level of service A representing the best traffic conditions (free-flowing traffic) and level of service F representing the worst (congestion and stop-and-go traffic). Level of service descriptions are shown in Figures 1-3a through 1-3d. Figure 1-3a shows operating speeds for each of the level of service for freeways, which applies to State Route 99, State Route 58 (East), and the proposed new construction in Segment 1. Figure 1-3b shows operating speeds for each of the level of service for multi-lane highways, which applies to the remaining roadways (such as Rosedale Highway and Stockdale

LEVELS OF SERVICE
for Freeways

Level of Service	Flow Conditions	Operating Speed (mph)	Technical Descriptions
A		70	Highest quality of service. Traffic flows freely with little or no restrictions on speed or maneuverability. **No delays**
B		70	Traffic is stable and flows freely. The ability to maneuver in traffic is only slightly restricted. **No delays**
C		67	Few restrictions on speed. Freedom to maneuver is restricted. Drivers must be more careful making lane changes. **Minimal delays**
D		62	Speeds decline slightly and density increases. Freedom to maneuver is noticeably limited. **Minimal delays**
E		53	Vehicles are closely spaced, with little room to maneuver. Driver comfort is poor. **Significant delays**
F		<53	Very congested traffic with traffic jams, especially in areas where vehicles have to merge. **Considerable delays**

Source: Caltrans 2012

Level of Service Descriptions for Freeways

Centennial Corridor, Kern County, California

D6-KERN-58 - PM T31.7 to PM R55.6

D6-KERN-99 - PM 21.2 to PM 26.2

Project ID# 06-0000-0484

Caltrans

Figure 1-3a

LEVELS OF SERVICE
for Multi-Lane Highways

Level of Service	Flow Conditions	Operating Speed (mph)	Technical Descriptions
A		60	Highest level of service. Traffic flows freely with little or no restrictions on maneuverability. **No delays**
B		60	Traffic flows freely, but drivers have slightly less freedom to maneuver. **No delays**
C		60	Density becomes noticeable with ability to maneuver limited by other vehicles. **Minimal delays**
D		57	Speed and ability to maneuver is severely restricted by increasing density of vehicles. **Minimal delays**
E		55	Unstable traffic flow. Speeds vary greatly and are unpredictable. **Minimal delays**
F		<55	Traffic flow is unstable, with brief periods of movement followed by forced stops. **Significant delays**

Source: Caltrans 2012

Level of Service Descriptions for Multi-Lane Highways

Centennial Corridor, Kern County, California

D6-KERN-58 - PM T31.7 to PM R55.6

D6-KERN-99 - PM 21.2 to PM 26.2

Project ID# 06-0000-0484

Caltrans

Figure 1-3b

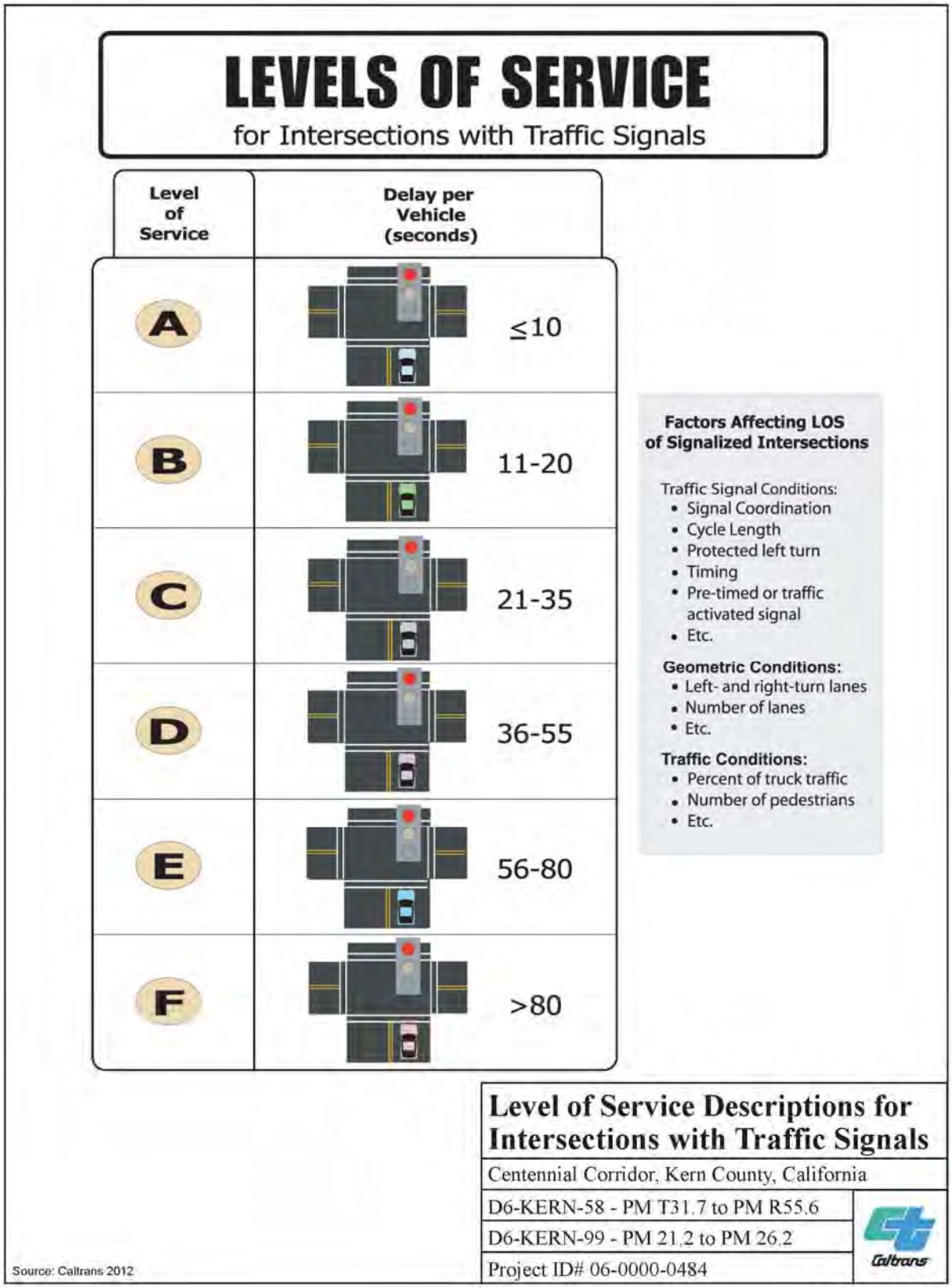

LEVELS OF SERVICE
for Intersections with Traffic Signals
Level of Service
Delay per Vehicle (seconds)
A
≤10
B
11-20
C
21-35
D
36-55
E
56-80
F
>80
Factors Affecting LOS of Signalized Intersections
Traffic Signal Conditions:
• Signal Coordination
• Cycle Length
• Protected left turn
• Timing
• Pre-timed 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: Caltrans 2012
Level of Service Descriptions for Intersections with Traffic Signals
Centennial Corridor, Kern County, California
D6-KERN-58 - PM T31.7 to PM R55.6
D6-KERN-99 - PM 21.2 to PM 26.2
Project ID# 06-0000-0484
Caltrans

Figure 1-3c

LEVELS OF SERVICE

for Unsignalized Intersections

Level of Service	Flow Conditions	Delay per Vehicle (seconds)	Technical Descriptions
A		<10	Highest quality of service. Free traffic flow with few restrictions on maneuverability or speed. **Very short delay**
B		10-15	Stable traffic flow. Speed becoming slightly restricted. Low restriction on maneuverability. **No delays**
C		15-25	Stable traffic flow, but less freedom to select speed, change lanes or pass. **Minimal delays**
D		25-35	Traffic flow becoming unstable. Speeds subject to sudden change. Passing is difficult. **Minimal delays**
E		35-50	Unstable traffic flow. Speeds change quickly and maneuverability is low. **Significant delays**
F		>50	Heavily congested traffic. Demand exceeds capacity and speeds vary greatly. **Considerable delays**

Source: Caltrans 2012

Level of Service Descriptions for Unsignalized Intersections

Centennial Corridor, Kern County, California

D6-KERN-58 - PM T31.7 to PM R55.6

D6-KERN-99 - PM 21.2 to PM 26.2

Project ID# 06-0000-0484

Caltrans

Figure 1-3d

Highway) in the study area. Figure 1-3c is for intersections with signals and Figure 1-3d is for intersections without signals. For the intersections, the figures show the number of seconds of delay for each of the levels of service is provided.

The California Department of Finance estimated that the population of Kern County increased at a rate of 2.5 percent between July 2000 and July 2009, nearly double the rate for California as a whole. By 2035, the population of Bakersfield is expected to reach 848,487 persons or about 60 percent of the expected population in all of Kern County. In 20 to 30 years, as the population continues to grow, traffic congestion will increase on many local roadways during peak commute hours unless roadway improvements are made. See Table 1.1 (Existing and Future Levels of Service for Key Intersections Without Project) for more information.

A *Traffic Study Report for the Centennial Corridor Project* (November 2012) was prepared to evaluate the operation of existing roadways, project those conditions 20 years into the future, and compare operations of both the no-build and build alternatives. The traffic projections for future years were generated from the Kern Council of Governments' 2006 Regional Travel Model (Update 1, which is based in part on regional growth forecasts).

Table 1.1 summarizes existing and forecasted average daily traffic counts predicted for selected key intersections within the project study area in 2008 (existing or baseline conditions), 2018 (opening year of the project), and 2038 (design year of the project). This comparison uses the level of service during the busiest times of the day (peak hours). The morning peak period is from 7:00 to 9:00 a.m. and the afternoon peak period is from 3:00 pm to 6:00 p.m. The peak 60 minutes of traffic volume varies by location.

Under baseline conditions (2008), within the project area limits, 15 key intersections with signals operated at worse than level of service D (25 to 35 seconds of delay) during one or both peak hour periods. In addition, one key intersection without a signal operated at an unacceptable level of service (worse than level of service D). Figures 1-3a through 1-3d provide the delay time for intersection and the estimated speeds for the freeways for each level of service category.

Under 2018 No-Build Alternative conditions, 12 intersections (11 with signals and 1 without signals) in the project area are projected to operate at worse than level of service D during one or both peak hour periods. Under 2038 No-Build Alternative conditions, 22 intersections (18 with signals and 4 without signals) in the project area are projected to operate at worse than level of service D during one or both peak hours. For details, see Section 3.1.6, Traffic and Transportation/Pedestrian and Bicycle Facilities.

Traffic Congestion on the Shared Portion of State Routes 58 and 99

State Route 99, which is the major Central Valley north-south highway in California, provides a connection between the two legs of State Route 58 (Rosedale Highway and State Route 58 East) for drivers traveling in the east-west direction. The merging

of two major State Routes (58 and 99) into one alignment between the eastern and western legs of State Route 58 (a distance of about two miles) has made the traffic level of service deteriorate on this segment of freeway. Conditions are projected to worsen in the coming years.

Also, State Route 99's close spacing for its two connections with State Route 58 (East and West), as well as an interchange at California Avenue, has resulted in conflicting merging conditions (cars coming onto the freeway are trying to move to the left and the cars on the freeway are trying to move to the right to use the off-ramp) that add to traffic congestion. The Caltrans standard for spacing between freeway-to-freeway connections is 2 miles, and the standard for spacing between interchanges is 1 mile. In this location, the two connectors from State Route 58 to State Route 99 and the California Avenue interchange are all located in slightly over 2 miles.

Other highway projects in the area, such as the Rosedale Highway Widening Project, which will widen Rosedale Highway to six lanes from State Route 99 to Allen Road, do not provide enough traffic capacity to satisfy the projected need. The *Traffic Study Report for the Centennial Corridor Project* assumes the implementation of street improvements that are funded by the Regional Transportation Improvement Program and the Metropolitan Bakersfield Transportation Impact Fee Program that are expected to be built between 2013 and 2038. These programs include a wide range of transportation improvements, including the Rosedale Widening Project, 24th Street Widening, and the North Beltway project. Even with these projects, given the projected population and employment growth trends, traffic congestion would occur along Rosedale Highway, 24th Street, the Truxtun Avenue extension west of Oak Street, portions of Stockdale Highway, State Route 99, portions of State Route 178, Coffee Road, Mohawk Street, and Union Avenue.

Figure 3-11, provided in Volume 2, and Table 1.1 shows future congestion at various roadway intersections, represented by levels of service without the project in 2018 and 2038. Table 1.2 shows the level of service of various freeway segments on State Routes 58 and 99 in the project area without the project for the same years. For some freeway mainline segments, heavy congestion (levels of service E and F) is predicted for both morning and afternoon peak hours by 2038 under no-build conditions. With improvements on State Route 58, traffic is expected to shift from parallel arterial streets to the Centennial Corridor. This would relieve congestion on the larger roadway network, which would result in systemwide benefits. Systemwide benefits extend beyond just improving traffic conditions to include time, costs, and environmental improvements. The Federal Highway Administration has developed the Surface Transportation Efficiency Analysis Model (STEAM) version 2.0 to quantify the benefits and costs of the project. Factors considered in this model include travel time savings, fuel costs, expected accident costs, and environmental benefits/ costs (such as reduction in air pollution and changes to noise levels). The benefits are balanced against the costs of building the project. A 20-year life cycle is used for estimating the costs. The build alternatives all would provide benefits that exceed the cost of construction of the project. The STEAM analysis is discussed in greater detail in Section 3.1.6, Traffic and Transportation/ Pedestrian and Bicycle Facilities.

Table 1.1 Existing and Future Levels of Service for Key Intersections Without Project

Intersection[a]	Existing (Baseline) Conditions (2008)			Forecasted Conditions (2018)			Forecasted Conditions (2038)		
	Traffic Control	Peak Hour	LOS[b] Average Delay	Traffic Control	Peak Hour	No-Build Alternative LOS[b] Average Delay	Traffic Control	Peak Hour	No-Build Alternative LOS[b] Average Delay
Interstate 5/Stockdale Highway ramps	Unsignalized	AM	B	Unsignalized	AM	A	Unsignalized	AM	A
		PM	C		PM	A		PM	F (southbound)
Stockdale Highway/Enos Lane	Unsignalized	AM	B	Unsignalized	AM	F	Unsignalized	AM	F
		PM	D		PM	F		PM	F
Rosedale Highway/Enos Lane	Unsignalized	AM	B	Unsignalized	AM	B	Unsignalized	AM	D
		PM	B		PM	D		PM	F
Stockdale Highway/Wegis Avenue	Unsignalized	AM	unavailable	Unsignalized	AM	A	Unsignalized	AM	F
		PM	unavailable		PM	B		PM	F
Stockdale Highway/Heath Road	Unsignalized	AM	C	Signalized	AM	C	Signalized	AM	C
		PM	C		PM	C		PM	C
Allen Road/Rosedale Highway	Signalized	AM	D	Signalized	AM	C	Signalized	AM	D
		PM	E		PM	D		PM	D
Calloway Drive/Rosedale Highway	Signalized	AM	E	Signalized	AM	D	Signalized	AM	D
		PM	F		PM	D		PM	D
Calloway Drive/Stockdale Highway	Signalized	AM	D	Signalized	AM	D	Signalized	AM	D
		PM	D		PM	C		PM	D
Coffee Road/Rosedale Highway	Signalized	AM	E	Signalized	AM	E	Signalized	AM	F
		PM	E		PM	F		PM	F
Coffee Road/Stockdale Highway	Signalized	AM	F	Signalized	AM	D	Signalized	AM	E
		PM	F		PM	D		PM	F
Mohawk Street/Rosedale Highway	Unsignalized	AM	F	Signalized	AM	E	Signalized	AM	F
		PM	F		PM	F		PM	F
Mohawk Street/Truxtun Avenue	Signalized	AM	C	Signalized	AM	C	Signalized	AM	C
		PM	D		PM	C		PM	E
Mohawk Street/California Avenue	Signalized	AM	C	Signalized	AM	C	Signalized	AM	F
		PM	C		PM	F		PM	F

Table 1.1 Existing and Future Levels of Service for Key Intersections Without Project

Intersection[a]	Existing (Baseline) Conditions (2008)			Forecasted Conditions (2018)			Forecasted Conditions (2038)		
	Traffic Control	Peak Hour	LOS[b] Average Delay	Traffic Control	Peak Hour	No-Build Alternative LOS[b] Average Delay	Traffic Control	Peak Hour	No-Build Alternative LOS[b] Average Delay
Stockdale Highway/California Ave	Signalized	AM	E	Signalized	AM	E	Signalized	AM	F
		PM	F		PM	D		PM	F
Rosedale Highway/State Route 99 southbound ramps	Signalized	AM	D	Signalized	AM	B	Signalized	AM	C
		PM	D		PM	C		PM	D
Rosedale Highway/State Route 99 northbound ramps	Signalized	AM	D	Signalized	AM	C	Signalized	AM	C
		PM	F		PM	C		PM	C
Truxtun Avenue/Oak Street	Signalized	AM	D	Signalized	AM	D	Signalized	AM	E
		PM	E		PM	D		PM	E
California Avenue/State Route 99 southbound ramps	Signalized	AM	D	Signalized	AM	D	Signalized	AM	D
		PM	D		PM	E		PM	E
California Avenue/State Route 99 northbound ramps	Signalized	AM	E	Signalized	AM	C	Signalized	AM	C
		PM	C		PM	C		PM	D
California Avenue/Oak Street	Signalized	AM	D	Signalized	AM	C	Signalized	AM	C
		PM	E		PM	E		PM	E
Stockdale Highway/Stine Road	Unsignalized	AM	unavailable	Signalized	AM	D	Signalized	AM	F
		PM	unavailable		PM	E		PM	F
Stockdale Highway/Real Road	Signalized	AM	F	Signalized	AM	E	Signalized	AM	D
		PM	F		PM	E		PM	F
Stockdale Highway/State Route 99 southbound ramp	Signalized	AM	B	Signalized	AM	B	Signalized	AM	B
		PM	B		PM	B		PM	B
Real Road/State Route 58 (East)	Signalized	AM	C	Signalized	AM	C	Signalized	AM	C
		PM	C		PM	C		PM	D
Ming Avenue/New Stine Road	Signalized	AM	E	Signalized	AM	D	Signalized	AM	D
		PM	E		PM	D		PM	E
Ming Avenue/Real Road	Signalized	AM	C	Signalized	AM	C	Signalized	AM	C
		PM	E		PM	C		PM	E

Table 1.1 Existing and Future Levels of Service for Key Intersections Without Project

Intersection[a]	Existing (Baseline) Conditions (2008)			Forecasted Conditions (2018)			Forecasted Conditions (2038)		
	Traffic Control	Peak Hour	LOS[b] Average Delay	Traffic Control	Peak Hour	No-Build Alternative LOS[b] Average Delay	Traffic Control	Peak Hour	No-Build Alternative LOS[b] Average Delay
White Lane/Wible Road	Signalized	AM	D	Signalized	AM	**E**	Signalized	AM	**F**
		PM	**F**		PM	**E**		PM	**F**
White Lane/State Route 99 southbound ramps	Signalized	AM	C	Signalized	AM	C	Signalized	AM	C
		PM	**F**		PM	**F**		PM	**F**
White Lane/State Route 99 northbound ramps	Signalized	AM	A	Signalized	AM	A	Signalized	AM	B
		PM	A		PM	A		PM	**B**
H Street/Brundage Lane	Signalized	AM	C	Signalized	AM	C	Signalized	AM	C
		PM	D		PM	D		PM	**E**
H Street/State Route 58 (East) westbound ramp	Signalized	AM	B	Signalized	AM	B	Signalized	AM	C
		PM	**E**		PM	**E**		PM	**E**
H Street/State Route 58 (East) eastbound ramp	Signalized	AM	D	Signalized	AM	D	Signalized	AM	D
		PM	C		PM	C		PM	C
Chester Avenue/Brundage Lane	Signalized	AM	C	Signalized	AM	C	Signalized	AM	C
		PM	C		PM	C		PM	**E**

Note: **Bold** font and shading indicates intersection operations worse than Level of Service D.
LOS: level of service; AM: morning; PM: afternoon.
[a] For location of each intersection, refer to Figure 3-11.
[b] Level of service calculations completed using the CORSIM microsimulation and Synchro 6 analysis software packages.

Signalized = with traffic signals
Unsignalized = without traffic signals

Source: Developed from the *Traffic Study Report for the Centennial Corridor Project* 2012.

Table 1.2 Existing and Future Levels of Service for State Route 99 Mainline Without Project

Location	Existing (Baseline) Conditions (2008)[a]		Forecasted Conditions (2018)[b]		Forecasted Conditions (2038)	
	AM	PM	AM	PM	AM	PM
State Route 99 Northbound						
State Route 99 northbound south end of the network to White Lane off-ramp	C	B	C	C	**E**	D
White Lane off-ramp to White Lane loop on-ramp	C	B	B	B	D	C
White Lane loop on-ramp to White Lane direct on-ramp	N/A	N/A	C	C	**F**	D
White Lane direct on-ramp to Ming Avenue off-ramp	D	C	C	C	**F**	**F**
Ming Avenue off-ramp to Ming Avenue on-ramp	C	B	D	C	**F**	**F**
Ming Avenue on-ramp to State Route 58 eastbound/Wible off-ramp	N/A	N/A	**F**	**E**	**F**	**F**
State Route 58 eastbound/Wible Road off-ramp to Wible Road on-ramp	C	B	C	C	C	C
Wible on-ramp to State Route 58 westbound on-ramp	N/A	N/A	C	C	C	C
State Route 58 westbound on-ramp to California Avenue off-ramp	D	C	D	D	D	D
California Avenue off-ramp to California Avenue loop on-ramp	C	B	C	C	C	D
California Avenue loop on-ramp to California Avenue direct on-ramp	N/A	N/A	C	D	D	D
California Avenue direct on-ramp to Rosedale Highway off-ramp	D	C	C	C	C	D
Rosedale Highway off-ramp to Buck Owens Boulevard/Sillect off-ramp	N/A	N/A	B	C	C	C
Buck Owens Boulevard/Sillect Avenue off-ramp to Buck Owens Boulevard/Sillect Avenue on-ramp	B	B	B	B	B	C
Buck Owens Boulevard/Sillect Avenue on-ramp to Airport Drive Off-Ramp	N/A	N/A	B	C	C	C
Airport Drive off-ramp to Golden State Avenue	B	B	A	B	B	B
State Route 99 Southbound						
Golden State Avenue to Airport Drive on-ramp	C	C	B	B	B	C
Airport Drive on-ramp to Rosedale Highway off-ramp	C	C	C	C	C	**E**
Rosedale Highway off-ramp to Rosedale Highway loop on-ramp	B	C	B	C	B	C
Rosedale Highway loop on-ramp to Rosedale Highway direct on-ramp	N/A	N/A	B	D	C	D
Rosedale Highway direct on-ramp to California Avenue off-ramp	C	D	C	D	D	**E**
California Avenue off-ramp to California Avenue on-ramp	C	C	C	D	C	**E**
California Avenue on-ramp to State Route 58 eastbound/Stockdale Highway off-ramp	C	D	C	**E**	D	**E**
State Route 58 eastbound/Stockdale Highway off-ramp to State Route 58 westbound on-ramp	B	C	B	C	B	D
State Route 58 westbound on-ramp to Real Road on-ramp	N/A	N/A	C	**E**	D	**F**
Real Road on-ramp to Ming Avenue off-ramp	N/A	N/A	C	D	D	**F**

Table 1.2 Existing and Future Levels of Service for State Route 99 Mainline Without Project

Location	Existing (Baseline) Conditions (2008)[a]		Forecasted Conditions (2018)[b]		Forecasted Conditions (2038)	
	AM	PM	AM	PM	AM	PM
Ming Avenue off-ramp to Ming Avenue on-ramp	B	C	B	C	C	D
Ming Avenue on-ramp to White Lane off-ramp	C	D	B	C	C	D
White Lane off-ramp to White Lane loop on-ramp	B	B	B	B	C	C
White Lane loop on-ramp to White Lane direct on-ramp	N/A	N/A	B	B	C	C
White Lane direct on-ramp to Panama Lane	B	C	B	C	C	D
State Route 58 Eastbound						
State Route 58 west end of the network to State Route 99 on-ramp	N/A	N/A	B	A	B	A
State Route 99 on-ramp to H Street off-ramp	N/A	N/A	C	C	C	C
H Street off-ramp to Chester Avenue on-ramp	D	D	C	C	C	C
Chester Avenue on-ramp to Union Avenue off-ramp	D	D	C	C	C	C
Union Avenue off-ramp to Union Avenue loop on-ramp	C	D	B	C	C	C
Union Avenue loop on-ramp to Union Avenue diagonal on-ramp	N/A	N/A	C	C	C	C
Union Avenue diagonal on-ramp to Cottonwood Road off-ramp	D	D	C	C	C	D
Cottonwood Road off-ramp to Cottonwood Road on-ramp	N/A	N/A	B	C	C	C
Cottonwood Road on-ramp to State Route 58 east end of the network	N/A	N/A	C	C	C	D
State Route 58 Westbound						
State Route 58 east end of the network to Cottonwood Road off-ramp	N/A	N/A	C	C	D	C
Cottonwood Road off-ramp to Cottonwood Road on-ramp	N/A	N/A	B	B	C	C
Cottonwood Road on-ramp to Brundage Lane off-ramp	D	D	C	C	D	C
Brundage Lane off-ramp to Brundage Lane on-ramp	C	C	B	B	C	C
Brundage Lane on-ramp to Union Avenue on-ramp	N/A	N/A	B	C	C	C
Union Avenue on-ramp to Chester Avenue off-ramp	N/A	N/A	C	C	C	C
Chester Avenue off-ramp to H Street on-ramp	C	C	B	B	C	D
H Street on-ramp to State Route 99 northbound off-ramp	D	D	C	C	C	**E**
State Route 99 northbound off-ramp to State Route 99 southbound off-ramp	B	C	B	B	B	**E**

Note: **Bold** font and shading indicates intersection operations worse than Level of Service D.

AM: Morning; PM: Afternoon; N/A: Not Available.

[a] Results based on HCS Analysis

[b] Based on simulation results

Source: Developed from the *Traffic Study Report for the Centennial Corridor Project* 2012.

1.2.3 Independent Utility and Logical Termini

Federal Highway Administration regulations (23 Code of Federal Regulations [CFR] 771.111[f]) require that (1) projects have logical limits and be long enough that the environmental analysis has a broad scope; (2) projects are usable and a reasonable use of funds even if no additional transportation improvements in the area are made (this is known as independent utility); and (3) approval of a project does not restrict consideration of alternatives for other reasonably foreseeable transportation improvements. As discussed below, the Centennial Corridor Project complies with these requirements.

The Segment 1 project would close a gap by connecting State Route 58 (East) with the new Westside Parkway (Segment 2). Segments 1 and 2 and Stockdale Highway would serve the developed portion of metropolitan Bakersfield by moving traffic, goods, and freight through the area, plus provide access to Interstate 5 for improved regional access. Stockdale Highway would satisfy the travel demand through the 2038 planning horizon by providing a direct access to Interstate 5 (since 2038 is the planning design year, the needs beyond 2038 have not been evaluated as part of this study).

Another important consideration is whether the project is of sufficient length to address potential environmental impacts on a broad scope. At 17.4 to 18.5 miles long (depending on the alternative), the study corridor extends well beyond the proposed construction limits, and allows for evaluation of environmental impacts on a sufficiently broad scope.

The project's phased implementation would provide an effective and efficient roadway even if no additional transportation improvements are made. As discussed in Section 3.1.6, Traffic and Transportation/Pedestrian and Bicycle Facilities, the connection of Segment 1 with Segment 2 would provide an improved and adequate traffic level of service through 2038 (the project's design year). Finally, no other projects would be needed to meet the project's objectives or would depend on construction of the Centennial Corridor project.

Approval of the project does not restrict consideration of alternatives for other reasonably foreseeable transportation improvements. The Regional Transportation Plan identifies a number of other transportation improvements that are expected by 2035. Each of these is being developed independently of the Centennial Corridor, and none would be made impossible by the corridor. The Centennial Corridor project would not conflict with or constrain the design of any of these projects.

Segment 3 traffic would use Stockdale Highway to access Interstate 5 and would not constrain the design of Segment 3 in the future (year 2038 and beyond).

Chapter 2 Project Alternatives

2.1 Alternatives

The Centennial Corridor project is divided into three segments (see Figure 1-2). Segment 1 alternatives are bound on the east by Cottonwood Road, on the west by Calloway Drive, on the north by Gilmore Avenue, and on the south by Wilson Road. Construction of Segment 1 is proposed to begin in 2016 and be completed in 2018.

Three build alternatives—Alternatives A, B, and C—and a No-Build Alternative are being considered for Segment 1 of the project as shown in Figure 2-1. Selection of a preferred alternative will be based on how well each project alternative is able to meet the project purpose and need (discussed in Chapter 1), address impacts to the community and environment, and be cost-effective.

No alternative alignments are proposed for Segment 2 because the project would use the Westside Parkway. Only minor changes to Segment 2 are required and these would be done within the existing right-of-way.

Stockdale Highway would be used as the State Route 58 connection to Interstate 5. The existing Stockdale Highway and interchange at Interstate 5 would satisfy travel demand through the planning horizon of 2038. However, to accommodate the additional traffic volumes, intersection improvements at Stockdale Highway and State Route 43 are being proposed.

2.1.1 Build Alternatives

The actions for Centennial Corridor project would be (1) route adoption for a continuous route for State Route 58 from the existing freeway portion of State Route 58 east of State Route 99 to Interstate 5 with the western portion on existing Stockdale Highway from Heath Road to Interstate 5; and (2) approval for construction of Segment 1, improvements within Segment 2, and intersection improvements at the Stockdale Highway and State Route 43 (known locally as Enos Lane) intersection. Common and unique design features of each build alternative are described below.

Common Design Features of the Build Alternatives

Preliminary design plans for Alternatives A, B and C, showing the right-of-way requirements are provided in Appendix E, in Volume 2 of this document. The build alternatives propose to connect State Route 58 (East) to the east end of the Westside Parkway by means of a six-lane freeway. Though the alignment and design characteristics vary by alternative, there are common design features to each of the three build alternatives, as noted below.

Segment 1 (Eastern Connection)

All three build alternatives would provide the following connections between existing State Route 58 (East) and State Route 99 using high-speed connection ramps:

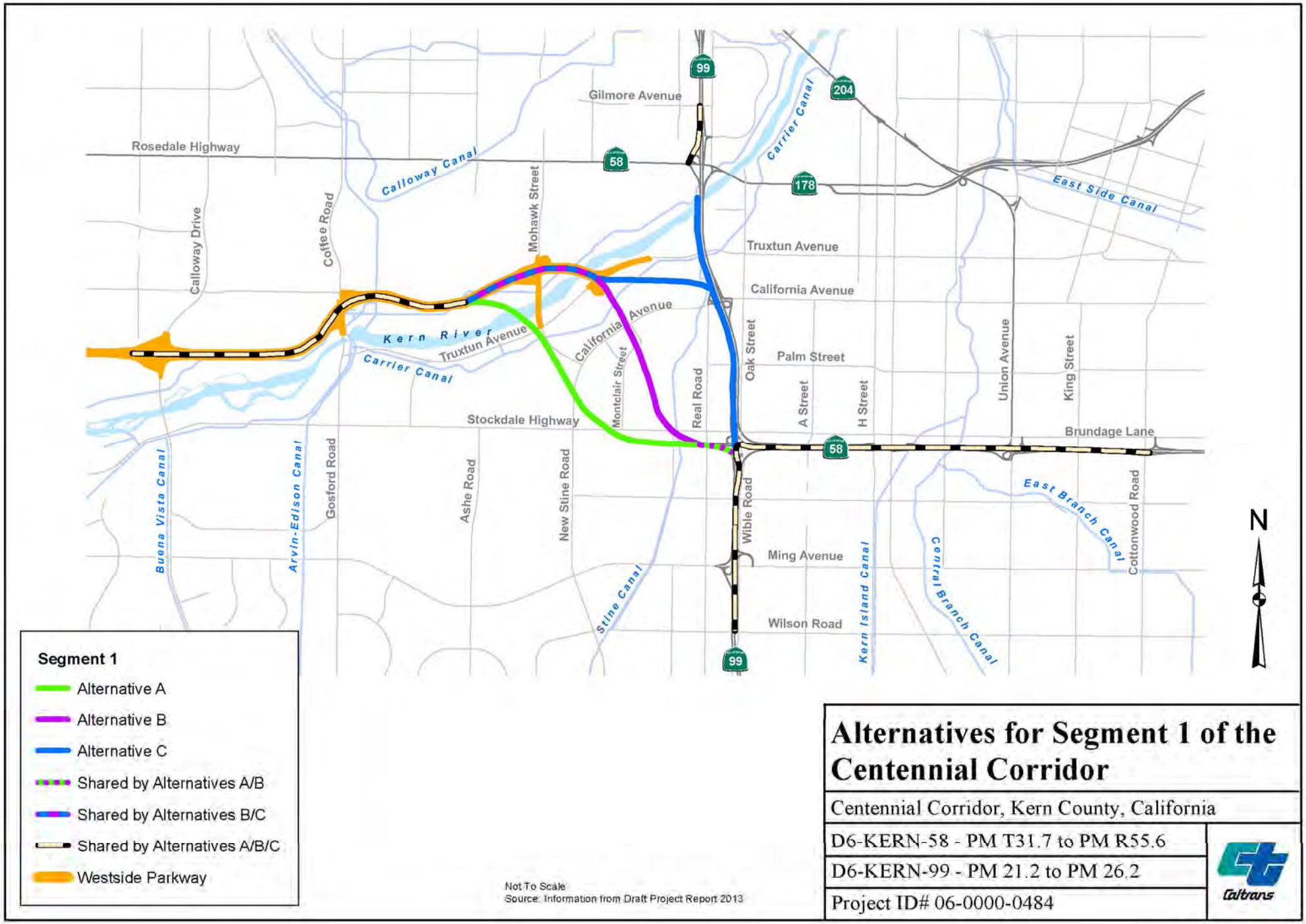
- Northbound State Route 99 to westbound Centennial Corridor
- Northbound State Route 99 to eastbound State Route 58 (East)
- Southbound State Route 99 to eastbound State Route 58 (East)
- Eastbound Centennial Corridor to southbound State Route 99
- Westbound State Route 58 (East) to southbound and northbound State Route 99

Build alternatives A, B, and C would not include direct connectors from southbound State Route 99 to westbound State Route 58 and from eastbound State Route 58 to northbound State Route 99. The traffic demand forecast for 2038 (the planning horizon year) identifies that the direct connectors would primarily service regional traffic while interregional traffic passing through the triangle area formed by State Route 99, Interstate 5 and State Route 58 would use shorter and more direct routes instead of the connectors. For example, the traffic from the south would directly access State Route 99 at the State Route 99/Interstate 5 Interchange located 24 miles south of State Route 58 East. Also, traffic going between Interstate 5 and State Route 99, north of Bakersfield, would continue to use State Route 46 (approximately 17 miles north of Stockdale Highway) due to more efficient travel times as compared to using the Westside Parkway and Centennial Corridor.

In addition, the traffic modeling for Alternatives A and B, projects that traffic traveling on southbound State Route 99 to westbound State Route 58, would opt for the shorter 2-mile alternate route, by exiting at Rosedale Highway, traveling west to Mohawk Street and then going south on Mohawk Street to join Westside Parkway, versus traveling 4.5 miles on State Route 58 and State Route 99. Traffic traveling east on Westside Parkway would use the same route in the reverse direction.

The cost for the Alternative A and B future connectors is estimated at $183 million, and the cost for the Alternative C future connectors is estimated at $240 million. The project would not preclude the construction of the connectors in the future when it is demonstrated that the traffic volumes would justify the cost.

The project proposes to rebuild the southbound State Route 99 Rosedale Highway off-ramp from an existing one-lane off-ramp with two lanes at the ramp end to a two-lane off-ramp with four lanes at the end, including an auxiliary lane, which begins south of Gilmore. A separate project (the Rosedale Highway Widening Project), scheduled to open June 2015, would widen Rosedale Highway from four lanes to six lanes, provide two left-turn lanes from westbound Rosedale Highway to southbound Mohawk Street, and two right-turn lanes from northbound Mohawk Street to eastbound Rosedale Highway.



Alternatives for Segment 1 of the Centennial Corridor

Centennial Corridor, Kern County, California

D6-KERN-58 - PM T31.7 to PM R55.6

D6-KERN-99 - PM 21.2 to PM 26.2

Project ID# 06-0000-0484

Caltrans

Figure 2-1

Changes to existing roadways common to all three build alternatives include widening the South P Street undercrossing and the westbound State Route 58 (East)/State Route 99 grade separation, and removing from State Route 99 the southbound Stockdale Highway off-ramp and the Wible Road on- and off-ramps.

"Typical" cross-sections are used to show the number of lanes and lane width for the average section of the roadway. For a project as complex as the Centennial Corridor, the width of the roadway would vary because of ramps and the need for auxiliary lanes. A typical cross-section helps explain what an average section of roadway would look like. Figure 2-2 shows the typical cross-section for Segment 1 and the existing portion of State Route 58 (East) of State Route 99. Figure 2-3, a typical cross-section for the portion of State Route 99 where improvements are proposed, shows that little would change under Alternatives A and B. But, under Alternative C, the Centennial Corridor would lie right next to State Route 99, resulting in a wider freeway typical cross-section.

Locations of auxiliary lanes vary by alternative and are discussed later in the Unique Features of the Build Alternatives section.

All the build alternatives provide sufficient right-of-way in the median for future high occupancy vehicle lanes (not proposed as part of the Centennial Corridor project), as demand warrants.

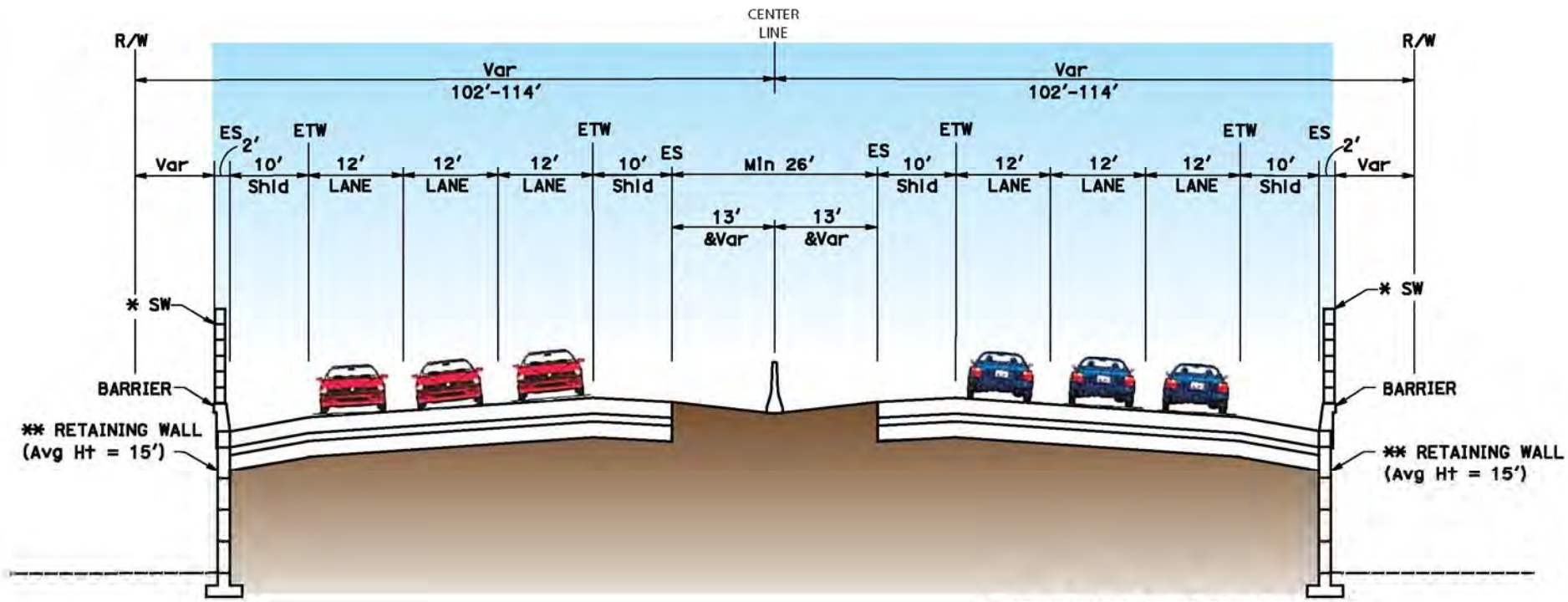
Other Common Design Features of Segment 1

Park and Ride Facilities

The Park and Ride facility west of State Route 99 and south of Stockdale Highway (at the intersection of Stockdale Highway and Nello Street) would be displaced by the proposed changes to the southbound connector to State Route 99 from westbound State Route 58. A new facility would be constructed to replace the lost park and ride lot. The design of the new facility will be determined during the final design phase of the project. This existing lot currently provides 49 parking spaces and is generally about half utilized. The location of the existing facility can be seen on the preliminary design plans provided in Appendix E, Volume 2 (Sheet 11 for Alternative A, Sheet 12 for Alternatives B and C).

Alternative A

A replacement Park and Ride facility with about 50 parking spaces would be provided off Mohawk Street, between California Avenue and Truxtun Avenue using residual property acquired for the project. This location would provide easy access to both eastbound and westbound State Route 58 via Mohawk Street and to State Route 99 via California Avenue. The location of the proposed replacement park and ride lot for Alternative A is shown on Figure 2-4a in Volume 2.



*= SOUND WALLS WHERE SHOWN IN PLANS
**= RETAINING WALLS WHERE SHOWN IN PLANS

Abbreviations Used:

Avg Ht = Average Height
ES = Edge of Shoulder
ETW = Edge of Traveled Way
Min = Minimum
R/W = Right-of-Way
Shld = Shoulder
Sw = Soundwall
Var = Varies

Not to Scale
Source: Developed from Draft Project Report 2013

Segment 1 Typical Cross-Section

Centennial Corridor, Kern County, California

D6-KERN-58 - PM T31.7 to PM R55.6

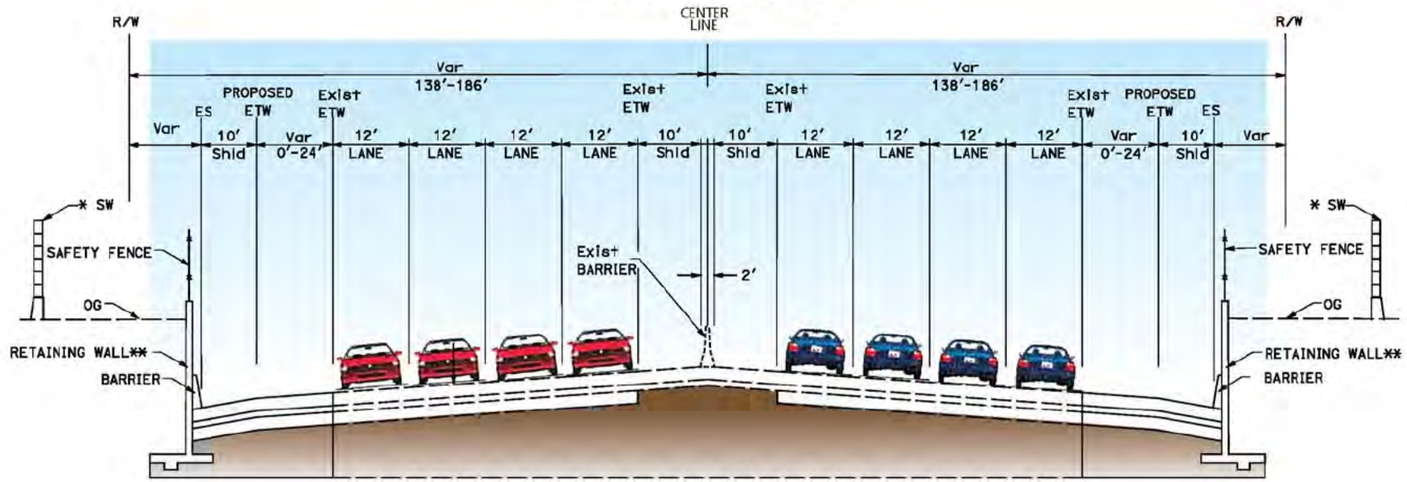
D6-KERN-99 - PM 21.2 to PM 26.2

Project ID# 06-0000-0484

Caltrans

Figure 2-2

Alternatives A and B

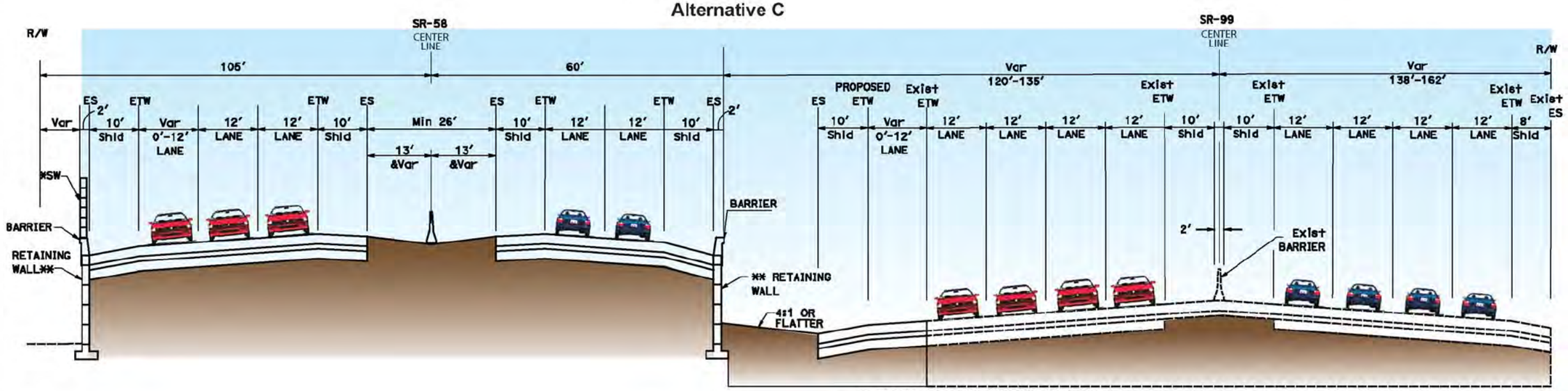


*= SOUND WALLS WHERE SHOWN IN PLANS
**= RETAINING WALLS WHERE SHOWN IN PLANS

Abbreviations Used:

Avg Ht = Average Height
ES = Edge of Shoulder
ETW = Edge of Traveled Way
Min = Minimum
OG = Original Ground
R/W = Right-of-Way
Shld = Shoulder
Sw = Soundwall
Var = Varies

Alternative C



*= SOUND WALLS WHERE SHOWN IN PLANS
**= RETAINING WALLS WHERE SHOWN IN PLANS

Not to Scale
Source: Traffic Study Report for the Centennial Corridor Project 2012

Typical Cross-Sections for State Route 99

Centennial Corridor, Kern County, California

D6-KERN-58 - PM T31.7 to PM R55.6

D6-KERN-99 - PM 21.2 to PM 26.2

Project ID# 06-0000-0484

Caltrans

Figure 2-3

Alternative B

A new Park and Ride facility with about 50 parking spaces would be provided north of California Avenue, next to the Centennial Corridor, using residual property acquired for the project. This location would provide easy access to eastbound and westbound State Route 58 at the Mohawk Street/Truxtun Avenue interchange and to State Route 99 via the California Avenue interchange. The location of the proposed replacement park and ride lot for Alternative B is shown on Figure 2-5a in Volume 2.

Alternative C

A replacement Park and Ride facility with about 50 parking spaces would be provided at Real Road and Chester Lane using residual property acquired for the project. This location would provide easy access to State Route 99 at the California Avenue interchange and to the westbound State Route 58 via the Mohawk/Truxtun Avenue interchange. The location of the proposed replacement park and ride lot for Alternative C is shown on Figure 2-6a in Volume 2.

Retaining Walls, Soundwalls and Landscaping

Aesthetic treatments for retaining walls and soundwalls would be consistent with the design used for the Westside Parkway (discussed in detail in Section 3.1.7, Visual/Aesthetics). Landscaping would be implemented upon completion of construction.

Alternative A

Forty-seven retaining walls, ranging from 5 feet to 35 feet high, would be built at various locations along Alternative A to reduce right-of-way impacts, as shown in Figure 2-4a (provided in Volume 2). Based on the *Noise Abatement Decision Report* (May 2013), 19 soundwalls, ranging from 8 to 16 feet high, have been identified as reasonable and feasible for Alternative A (see more discussion on soundwalls in Section 3.2.7, Noise). Locations of the soundwalls are shown in Figure 2-4a (provided in Volume 2) and in Section 3.2.7, Noise.

Alternative B

Thirty-seven retaining walls, ranging from 3 feet to 45 feet high, would be built at various locations along Alternative B to reduce right-of-way impacts, as shown in Figure 2-5a (provided in Volume 2). Based on the *Noise Abatement Decision Report* (May 2013), 24 soundwalls, ranging from 8 to 16 feet high, have been identified as reasonable and feasible for Alternative B (see more discussion on soundwalls in Section 3.2.7, Noise). Locations of these soundwalls are shown in Figure 2-5a (provided in Volume 2) and in Section 3.2.7, Noise.

Alternative C

Forty-six retaining walls, ranging from 2 feet to 45 feet high, would be built at various locations along Alternative C to reduce right-of-way impacts, as shown in Figure 2-6a (provided in Volume 2). Based on the *Noise Abatement Decision Report* (May 2013), 17 soundwalls, ranging from 10 to 16 feet high, have been identified as reasonable and feasible for Alternative C (see discussion on soundwalls in

Section 3.2.7, Noise). Locations of these soundwalls are shown in Figure 2-6a (provided in Volume 2) and in Section 3.2.7, Noise.

Infiltration Basins

Infiltration basins are proposed along the Centennial Corridor alignment to retain storm water runoff and improve water quality. In addition, existing basins along the alignment of State Route 58 and State Route 99 would need to be modified. The modification could include either deepening, resizing, or reshaping of the existing basins within their existing footprints.

Alternative A

Seven infiltration basins are proposed along the Alternative A alignment with two existing infiltration basins to be changed along the State Route 58 and 99 alignments. Locations of infiltration basins are shown in Figure 2-4a (provided in Volume 2).

Alternative B

Eight infiltration basins are proposed along the Alternative B alignment with six existing infiltration basins to be changed along the State Route 58 and 99 alignments. Locations of infiltration basins are shown in Figure 2-5a (provided in Volume 2).

Alternative C

Eleven infiltration basins are proposed along the Alternative C alignment with five existing infiltration basins to be changed along State Route 58 and 99. Locations of infiltration basins are shown in Figure 2-6a (provided in Volume 2).

Right-of-Way Acquisition

Temporary construction easements would be needed from many properties sitting at the edge of the new right-of-way where retaining walls and soundwalls are proposed. Also, minor amounts of right-of-way would be required for the intersection improvements at Stockdale Highway and State Route 43. Right-of-way impacts are discussed in more detail in Section 3.1.4.2, Relocation and Property Acquisition.

Alternative A

Alternative A would fully acquire 295 properties and partially acquire 109 properties. Of these properties, 211 of the full acquisitions would be residential parcels and 18 of the partial acquisitions would be residential parcels.

Alternative B

Alternative B would fully acquire 293 properties and partially acquire 129 properties. Of these properties, 215 of the full acquisitions would be residential parcels and 34 of the partial acquisitions would be residential parcels.

Alternative C

Alternative C would fully acquire 254 properties and partially acquire 86 properties. Of these properties, 98 of the full acquisitions would be residential parcels and 9 of the partial acquisitions would be residential parcels.

Utilities and Electrical

A number of utility lines, such as water lines, sewer lines, telecommunication lines, electrical lines/poles, including relocation of high-voltage electrical towers, natural gas lines, streetlights, fire hydrants, cable television lines, utility boxes, and oil wells would need to be abandoned, removed, relocated, or replaced as part of project construction. Lighting would be consistent with Caltrans standards and would be installed at interchanges and bridges.

Bicycles and Pedestrians

Pedestrian and bicycle crossings would be limited to the proposed undercrossings and overcrossings. The discussion of the bicycle and pedestrian crossings is provided in Section 3.1.6, Traffic and Transportation/Pedestrian and Bicycle Facilities.

Cost Estimate

The escalated 2016/17 fiscal year cost of Alternative A is estimated at $691 million, with $437.1 million for construction costs and $253.9 million for right-of-way costs. The escalated 2016/17 fiscal year cost of Alternative B is estimated at $570 million, with $390 million for construction costs and $180 million for right-of-way costs. The escalated 2016/17 fiscal year cost to build Alternative C is estimated at $665.5 million, with $452.2 million for construction costs and $213.3 million for right-of-way costs.

Unique Features of the Build Alternatives (Segment 1)

Alternative A

With Alternative A, State Route 58 (Centennial Corridor) would run parallel to Stockdale Highway for about half a mile west of the State Route 58 (East)/State Route 99 Interchange. It would then go northwesterly and follow an above-grade alignment over Montclair Street, Stockdale Highway, California Avenue/Lennox Avenue, Truxtun Avenue, and the Kern River before joining the east end of the Westside Parkway west of the Mohawk Street interchange. Figure 2-4a (provided in Volume 2) shows the general alignment of this alternative with the key features identified. Figure 2-4b (provided in Volume 2) shows the roadway alignments for both the Westside Parkway and the Centennial Corridor. As shown in this figure, Alternative A would provide a separate crossing of the Kern River. The conceptual plans for Alternative A are provided in Appendix E located in Volume 2.

Alternative A would require changes to State Route 99. State Route 58 would not intersect with Real Road, instead an undercrossing would be provided. This alternative proposes a number of structures, auxiliary lanes and permanently closed or realigned local streets. The specific street closures are discussed in more detail in Section 3.1.6, Traffic and Transportation/Pedestrian and Bicycle Facilities.

Alternative B

With Alternative B, State Route 58 (Centennial Corridor) would run parallel to Stockdale Highway for about 1,200 feet west of the State Route 58 (East)/State Route 99 interchange; there, it would go northwesterly and proceed as an above-grade

alignment, crossing over Stockdale Highway/Stine Road. Between Ford Avenue and California Avenue, the alignment would be depressed with overcrossings proposed at Marella Way and La Mirada Drive to help with local traffic circulation. The option of removing the La Mirada Drive overcrossing and adding a Ford Avenue undercrossing with Alternative B is also under consideration. The roadway would then be elevated and have above-grade crossings at California Avenue, Commerce Drive, Truxtun Avenue, and the Kern River before joining the east end of the Westside Parkway, east of the Mohawk Street interchange. Figure 2-5a (provided in Volume 2) shows the general alignment of this alternative with key features identified. Figure 2-5b (provided in Volume 2) shows the roadway alignments for both the Westside Parkway and the Centennial Corridor. As shown in this figure, Alternative B would incorporate a substantial amount of the improvements from the Westside Parkway in the area surrounding the Kern River. The conceptual plans for Alternative B are provided in Appendix E located in Volume 2.

Alternative B proposes the same connections to State Route 99 as Alternative A and would require similar improvements on State Route 99 and the existing State Route 58 (East). This alternative proposes a number of structures, changes to existing structures, auxiliary lanes and permanently closed or realigned local streets. The specific street closures are discussed in more detail in Section 3.1.6, Traffic and Transportation/Pedestrian and Bicycle Facilities.

Alternative C

With Alternative C, State Route 58 (East) would turn north from the existing State Route 58 (East)/State Route 99 interchange, running parallel to and west of State Route 99 for about 1 mile. The freeway would then turn west and cross the BNSF Railway rail yard, Truxtun Avenue, and the Kern River. Undercrossings are proposed at Brundage Lane, Oak Street, State Route 99, Palm Avenue, Truxtun Avenue, and California Avenue. Figure 2-6a (provided in Volume 2) shows the general alignment of this alternative with key features identified. Figure 2-6b (provided in Volume 2) shows the roadway alignments for both the Westside Parkway and the Centennial Corridor. As shown in this figure, Alternative C would incorporate a substantial amount of the improvements from the Westside Parkway in the area surrounding the Kern River. The conceptual plans for Alternative C are provided in Appendix E located in Volume 2.

Alternative C proposes to make changes to existing State Route 58 (East) and State Route 99. This alternative proposes a number of structures, auxiliary lanes and permanently closed or realigned local streets. The specific street closures are discussed in more detail in Section 3.1.6, Traffic and Transportation/Pedestrian and Bicycle Facilities.

Segment 2 (Westside Parkway)

The build alternatives would all connect to the Westside Parkway, which the final segment from Allen Road to Stockdale Highway near Heath Road is currently under construction. Impacts from constructing the Westside Parkway were evaluated in the *Westside Parkway Environmental Assessment/Final Environmental Impact Report*

and subsequent revalidation reports prepared by Caltrans and the City of Bakersfield in July 2008 and July 2010.

In its entirety, the 7.3-mile Westside Parkway alignment begins at Truxtun Avenue, about 1 mile west of State Route 99, and goes westward, crossing the Kern River near the existing BNSF Railway Bridge. About 0.25 to 0.50 mile to the north of the Kern River, the roadway then parallels the Kern River, to Allen Road. West of Allen Road, the alignment turns southwesterly and connects to Stockdale Highway at Heath Road.

The Westside Parkway would be incorporated into the State Highway System with each of the alternatives. Improvements to connect Centennial Corridor to the Westside Parkway would extend from where each build alternative connects at the eastern end of Westside Parkway toward the west, ending at the Calloway Drive interchange. The proposed improvements would widen the Westside Parkway by constructing one additional lane in the median to provide auxiliary lanes. In the westbound direction, the median widening would extend from east of the Friant-Kern Canal through the Calloway Drive interchange. The limits of the added lane in the eastbound direction would differ between each alternative as described in the unique design features of the build alternative section below. With each build alternative, changes to the westbound diamond off-ramp to Calloway Drive and the eastbound loop on-ramp from Coffee Drive would be required.

Segment 3 (Western Connection)

Segment 3 traffic would use Stockdale Highway as the link to Interstate 5. Improvements would be required at the Stockdale Highway and State Route 43 (Enos Lane) intersection for each build alternative. Proposed improvements there would widen the intersection and add traffic signals to control traffic movement. State Route 43 would be widened to add a dedicated left-turn lane in both directions. Stockdale Highway would be widened to add a dedicated left-turn lane and a shared through/right-turn lane in both directions, necessitating the acquisition of a small amount of right-of-way. In addition, utilities would be relocated in this location. These improvements would be built at the same time as the Segment 1 improvements to ensure adequate traffic operations at this intersection. Stockdale Highway would be designated as State Route 58 to provide access to Interstate 5. The existing portion of State Route 58 (West) (Rosedale Highway) from Allen Road to Interstate 5 would be relinquished (become a local road, no longer a state highway) to the local jurisdictions (City of Bakersfield and the County of Kern). The portion of State Route 58 (West) (Rosedale Highway) from Allen Road to Mohawk Street was relinquished in June 2012.

2.1.2 No-Build Alternative

No construction of Segment 1 or improvements to Westside Parkway and the Stockdale Highway/State Route 43 intersection would occur under the No-Build Alternative. The portion of Mohawk Street from the Westside Parkway to Rosedale Highway would be designated as part of State Route 58, which would provide a connection to State Route 99. Even if the No-Build Alternative is selected, other roadway improvements would be implemented that are unrelated to the Centennial

Corridor Project. These roadway improvements are to other local roadways and are identified in the Regional Transportation Plan and the Metropolitan Bakersfield Transportation Impact Fee Program. These improvements have been assumed in the analyses of the No-Build Alternative. Though these improvements would result in some improvement in the level of service they would not provide the route continuity, which is identified as part of the project's purpose.

2.1.3 Comparison of Alternatives

Each of the build alternatives requires a commitment of resources and would result in environmental impacts. This commitment is balanced with the ability to meet the project purpose and need and the effects of not implementing the project (the No-Build Alternative). Table S.1 provides a summary of key issues where impacts have been identified, whereas Table 2.1 provides an overview of key issues that differentiate the alternatives.

Table 2.1 Comparison of Alternatives

Criteria		Alternative A	Alternative B	Alternative C	No-Build Alternative
Meets the project purpose and need Improve route continuity and associated traffic congestion relief along State Route 58 within Metropolitan Bakersfield and Kern County from the existing State Route 58 east (from Cottonwood Road) to Interstate 5.		Yes—Provides route continuity between Interstate 5 and State Route 58.	Yes—Provides route continuity between Interstate 5 and State Route 58.	Yes—Provides route continuity between Interstate 5 and State Route 58.	No—Does not provide route continuity. Continued use of Rosedale Highway would be required.
Traffic and Transportation		Traffic delays experienced during construction. **Deficient freeway segments** 0 in 2018 4 in 2038 **Deficient intersections** 26 in 2018 32 in 2038 Net loss of 122 parking spaces.	Traffic delays experienced during construction. **Deficient freeway segments** 0 in 2018 4 in 2038 **Deficient intersections** 26 in 2018 33 in 2038 Net loss of 146 parking spaces.	Traffic delays experienced during construction. **Deficient freeway segments** 0 in 2018 5 in 2038 **Deficient intersections** 24 in 2018 30 in 2038 Net loss of 142 parking spaces.	Gap in east-west freeway in Bakersfield continued. **Deficient freeway segments** 4 in 2018 16 in 2038 **Deficient intersections** 25 in 2018 34 in 2038 No parking removed.
Number of Displacements	**Residences**	356	310	133	0
	Businesses	127	121	198	0
Number of Parcel Acquisitions	**Full Acquisition**	295	293	254	0
	Partial Acquisition	109	129	86	0
Community Cohesion		Adverse effects to community cohesion in the Southwest Bakersfield and the Quailwood-	Adverse effects to the character of the Southwest Bakersfield and Westpark neighborhoods are	Though consequential, the overall effects on cohesiveness would be less severe than the	None.

Table 2.1 Comparison of Alternatives

Criteria	Alternative A	Alternative B	Alternative C	No-Build Alternative
	Park Stockdale neighborhoods are anticipated.	anticipated. Bisecting the Westpark neighborhood would result in impacts to community cohesion.	effects of Alternatives A or B. Most residential displacements would be in environmental justice communities.	
Section 4(f) Properties Used	2 Section 4(f) properties used.	No Section 4(f) properties used.	1 Section 4(f) property used.	None.
Parks and Recreation	Displaces 6.28 acres of publicly owned parkland, a Section 4(f) property (Kern River Parkway).	No impacts to park and recreational resources.	Displaces 3.27 acres of publicly owned parkland, a Section 4(f) property (Saunders Park).	None.
Cultural Resources	Affects the Rancho Vista Historic District, a Section 4(f) property.	Indirect adverse effects on the Rancho Vista Historic District under the National Historic Preservation Act. No use of the property under Section 4(f).	No impacts to known historic properties.	None.
Hazards and Hazardous Wastes	Number of parcels with known or potential contamination requiring partial or full acquisition: • 5 parcels with known contamination • 15 parcels with suspected contamination • 14 parcels with potential contamination	Number of parcels with known or potential contamination requiring partial or full acquisition: • 5 parcels with known contamination • 11 parcels with suspected contamination • 12 parcels with potential contamination	Number of parcels with known or potential contamination requiring partial or full acquisition: • 5 parcels with known contamination • 14 parcels with suspected contamination • 23 parcels with potential contamination	None.
Noise	There are 532 frequent outdoor use areas affected. Nineteen recommended feasible and reasonable soundwalls would provide feasible	There are 484 frequent outdoor use areas affected. Twenty-four feasible and reasonable recommended soundwalls as well as one feasible but not reasonable recommended	There are 401 frequent outdoor use areas affected. Seventeen recommended feasible and reasonable soundwalls would provide feasible abatement for	There would be 336 frequent outdoor use areas that would approach the Noise Abatement Criteria with no abatement provided in 2038.

Table 2.1 Comparison of Alternatives

Criteria		Alternative A	Alternative B	Alternative C	No-Build Alternative
		abatement for 461 frequent outdoor use areas.	soundwall would provide feasible abatement for 408 frequent outdoor use areas. One soundwall is feasible but not reasonable; however, since this soundwall would close a gap in soundwalls, it is recommended to minimize noise impacts to 4 frequent outdoor use areas.	325 frequent outdoor use areas.	
Biological Resources	Natural Communities	95.38 acres of habitat removed. Affects 2 populations of Ferris goldfields (about 3,500 individual plants).	76.83 acres of habitat removed.	72.49 acres of habitat removed.	None.
	Threatened and Endangered Species	Affects 95.38 acres of Swainson's hawk foraging habitat and San Joaquin kit fox habitat. One active den is affected.	Affects 76.83 acres of Swainson's hawk foraging habitat and San Joaquin kit fox habitat. Three potential dens are affected.	Affects 72.49 acres of Swainson's hawk foraging habitat and San Joaquin kit fox habitat. One potential den is affected.	None.
	Wetland and Other Waters	3.54 acres of riparian habitat (0.35 acre permanent, 3.19 acres temporary).	Affects 1.06 acres of riparian habitat (temporary only).	Affects 1.42 acres of riparian habitat (temporary only).	None.
		Affects 7.23 acres of U.S. Army Corps of Engineers Jurisdiction (1.20 acres permanent, 6.03 acres temporary).	Affects 5.54 acres of U.S. Army Corps of Engineers Jurisdiction (1.00 acre permanent, 4.54 acres temporary).	Affects 7.42 acres of U.S. Army Corps of Engineers Jurisdiction (0.74 acre permanent, 6.68 acres temporary).	None.
		Affects 17.60 acres of California Department of Fish and Wildlife Jurisdiction.	Affects 7.74 acres of California Department of Fish and Wildlife Jurisdiction.	Affects 10.26 acres of California Department of Fish and Wildlife Jurisdiction.	None.

Table 2.1 Comparison of Alternatives

Criteria		Alternative A	Alternative B	Alternative C	No-Build Alternative
Cost of Alternative	Right-of-way costs	$253.9 million	$180 million	$213.3 million	$0
	Construction costs	$437.1 million	$390 million	$452.2 million	$0
	Total Costs	$691 million	$570 million	$665.5 million	$0

After the public review period of the Draft Environmental Impact Report/Environmental Impact Statement, all comments will be evaluated, and Caltrans will select a preferred alternative and make the final determination of the project's effect on the environment. In accordance with the California Environmental Quality Act, Caltrans will certify that the project complies with the California Environmental Quality Act, prepare findings for all significant impacts identified, prepare a Statement of Overriding Considerations for impacts that will not be mitigated below a level of significance, and certify that the findings and Statement of Overriding Considerations have been considered before project approval. Caltrans will then file a Notice of Determination with the State Clearinghouse that will identify whether the project will have significant impacts, mention whether mitigation measures are included as conditions of project approval, and state that findings were made and that a Statement of Overriding Considerations was adopted. With respect to the National Environmental Policy Act, Caltrans, as assigned by the Federal Highway Administration, will document and explain its decision regarding the selected alternative, project impacts, and mitigation measures in a Record of Decision in accordance with National Environmental Policy Act.

2.1.4 Preliminary Identification of a Preferred Alternative

As part of the screening process, three build alternatives, A, B, and C, were identified and evaluated at an equal level of detail in the technical studies and this environmental impact report/environmental impact statement. All three alternatives meet the project purpose and need of providing route continuity for State Route 58.

Many impacts are the same or similar in magnitude for all three alternatives. When determining a preferred alternative, the comparison focuses on those areas where the impacts are different or one alternative has greater impacts than the other alternatives. For the Centennial Corridor project, the distinguishing areas are the number of displacements and parcel acquisitions; impacts to community cohesion, parks, wetlands, cultural resources, and Section 4(f) property; and cost.

As presented, Alternative A has the greatest number of displacements of the three alternatives and is the most expensive. It would have the greatest impact on wetlands. It affects a park and the Rancho Vista Historic District, both Section 4(f) properties.

In comparing Alternatives B and C, Alternative B has more displacements, which are mostly residential, whereas Alternative C displaces more businesses. Alternative C would displace more wetlands than Alternative B. Alternative C would cost over $100 million more than Alternative B. Alternative B has more community cohesion

impacts because the alignment would bisect the Westpark neighborhood (in a diagonal manner), eliminating several east-west roadways and therefore changing the development. Alternative C would concentrate most of its residential displacements in two environmental justice communities, with the largest concentration of single-family home displacements in the environmental justice community south of Saunders Park. Alternative C would be above ground level in the Saunders Park neighborhood, while Alternative B would be below ground level in the Centennial Park neighborhood. Alternative C would also have direct impacts on Saunders Park, a Section 4(f) property in an environmental justice community. Alternative B would have no impact on parklands.

The Department of Transportation Act of 1966 included a special provision, Section 4(f) that states that federal Department of Transportation agencies cannot approve the use of land from publicly owned parks, recreational areas, wildlife and waterfowl refuges, or public or private historic sites unless the following conditions apply:

- There is no prudent and feasible alternative to using that land, and
- The program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.

Appendix B in Volume 2 provides a Section 4(f) Evaluation for the Centennial Corridor project. Three Section 4(f) properties were evaluated as being affected by the build alternatives—the Rancho Vista Historic District and the Kern River Parkway, which are affected by Alternative A, and Saunders Park, which is affected by Alternative C. Alternative B does not affect any properties subject to Section 4(f). As part of the Section 4(f) evaluation, variations of Alternatives A and C that would avoid Section 4(f) properties were evaluated; none were found to be feasible and prudent.

The legal requirements of the Department of Transportation Act of 1966 require that parkland be avoided unless there is no feasible and prudent alternative. Alternative B is a feasible and prudent alternative that avoids parkland and other Section 4(f) properties, such as historic properties. In addition, Alternative B has the least impact on wetlands. It is also the least expensive alternative, costing over $100 million less than the other alternatives.Therefore, after comparing and weighing the benefits and impacts of Alternatives A, B, and C, some of which are summarized in Tables S.1 and 2.1. Caltrans has identified Alternative B as the preferred alternative, subject to public review. Final identification of a preferred alternative will occur after the public review and comment period.

2.1.5 Alternatives Considered but Eliminated From Further Discussion

Table 2.2 provides the preliminary screening for the alternatives that were not carried forward for further evaluation.

Table 2.2 Alternatives Eliminated from Evaluation

Alignment	Alignment Description	Reason for Elimination from Further Evaluation
D	This alternative would begin near the existing State Route 58 /State Route 204 (Union Avenue) interchange. The alignment would run north for about 1 mile, then turn west and parallel the BNSF Railway railroad tracks for about 3 miles, then turn west and connect with the Westside Parkway near Mohawk Street.	Caltrans standards for interchange spacing could not be met; therefore existing interchanges on State Route 58 would need to be closed. This alternative would also require the permanently closure of 11th Street, Pershing Street, 10th Street, and 9th Street. It would displace parking for Mercy Hospital, City Hall, and downtown Bakersfield, which would require construction of parking structures. The fire station at State Route 58 and Union Avenue would need to be replaced. The preliminary cost estimate was about $1.1 billion, which is more than available funding.
E	The alignment would begin near the existing State Route 58/Washington Avenue interchange. The alignment would run north for about 1 mile, then turn west and parallel the BNSF Railway railroad tracks. It would connect with the Westside Parkway near Mohawk Street.	The preliminary cost estimate for this alternative was about $1.08 billion, partly due to more right-of-way acquisition required, which is more than available funding.
F	Also known as the South Beltway, the freeway would begin on State Route 58 about 4 miles east of State Route 184. The alignment would travel south, cross State Route 184, State Route 119, and State Route 99, before connecting to Interstate 5.	Alternative F is not within metropolitan Bakersfield and does not meet the project purpose and need of providing route continuity and providing traffic congestion relief. The preliminary cost estimate was about $1.29 billion, which is more than available funding.
G	The roadway would begin at the existing State Route 99/State Route 204 interchange. The alignment would follow the Friant-Kern Canal, then follow Meacham Road between Rosedale Highway and Hageman Road, and then turn southwest and run parallel to Hageman Road. The alignment would connect at Interstate 5 near Hageman Road.	Alternative G would result in severe operational and safety problems because of the close spacing of the proposed connection to State Route 99 and Olive Drive. The preliminary cost estimate for this alternative was about $1.05 billion, which is more than available funding.
H	Alternative H would build an elevated freeway near Rosedale Highway at the connection with State Route 99. East of State Route 43, this alternative would have the same alignment as Alternative G and connect at Interstate 5 near Hageman Road.	The preliminary cost estimate for this alternative was about $2.85 billion, partly due to more right-of-way acquisition required, which is more than available funding.
I	Alternative I would build a freeway along the existing alignment of State Route 58 (West), starting at its intersection with State Route 99 and go west along existing State Route 58 to Interstate 5.	The preliminary cost estimate for this alternative was about $1.09 billion, partly due to more right-of-way acquisition required, which is more than the funding available.
J	Alternative J would begin at State Route 99 and Hosking Road, about 1 mile north of State Route 119. The alignment would connect with Interstate 5 at the State Route 119 interchange.	Alternative J fails to meet the project's purpose of providing route continuity and associated traffic congestion relief because its route is not within metropolitan Bakersfield.
K	The freeway would begin near Coffee Road at the Westside Parkway. The route would run parallel to Brimhall Road; east of Heath Road, the roadway would turn northwest for about 0.5 mile, then continue west and connect with Interstate 5 about 0.5 mile north of Brimhall Road.	Alternative K does not meet the project's purpose and need of providing route continuity and associated traffic congestion relief. The preliminary cost estimate for this alternative was about $821 million, which is more than available funding.
L	The roadway would begin at State Route 99 and go west along Stockdale Highway, ending at Interstate 5.	The preliminary cost estimate for this alternative was about $1.20 billion, which is more than available funding.
M	This alternative would add grade separations along State Route 58 (Rosedale Highway) at Mohawk Street, Calloway Drive, Coffee Road, and Allen Road.	This alternative only partially meets some of the project purpose and need of providing route continuity and providing traffic congestion relief.
15	This alternative proposed a freeway that connects State Route 58 at State Route 204 (Union Avenue) to Interstate 5, passing through the downtown area parallel to State Route 204 and continuing west using the 7th Standard Road Corridor.	The preliminary cost estimate for this alternative was about $2.23 billion, partly due to more right-of-way acquisition required, which is more than the available funding.
Public Alternative 1	Public Alternative 1 was suggested by a member of the public and proposed an alignment between Alternative B and Alternative C.	This alternative would result in severe operational and safety problems because it could not meet Caltrans' geometric standards. If Caltrans standards and proper geometrics were applied, this alternative had an alignment similar to Alternative B.
Public Alternative 2	This alignment would begin on State Route 58 about 4 miles east of State Route 184. The freeway would cross State Route 184, continue west crossing State Route 99 about 1 mile north of State Route 119 and connect to Interstate 5 just north of the State Route 43 interchange.	This alternative does not meet the project's purpose and need of providing route continuity and traffic congestion relief. The preliminary cost estimate for this alternative was about $1.24 billion.
Public Alternative 3	This alternative proposed a new freeway along the existing State Route 223, connecting State Route 58 and Interstate 5, along the current State Route 223 alignment.	This alternative does not meet the project's purpose and need of providing route continuity and associated traffic congestion relief. The preliminary cost estimate for this alternative was about $1.72 billion.
Public Alternative 4	From the existing State Route 58 east of State Route 184, this alternative would parallel the Union Pacific Railroad line, then go northwest parallel to State Route 204 on the north side of the existing roadway. The alignment would cross Golden State Drive and State Route 99 south of Airport Drive, turn southwest, and connect with the Westside Parkway.	This alternative would not meet the purpose and need of the project because it does not provide route continuity and associated traffic congestion relief. It would not improve operations on the shared portion of State Route 58 and State Route 99. Instead, it would move the congestion on State Route 99 to the north in the vicinity of the Airport Drive interchange. The cost to build this alternative exceeds the available funding.

As part of the initial scoping process for the Centennial Corridor project, Caltrans considered a range of alternatives. Six build alternatives were developed by Caltrans and introduced at a public information meeting in March 2008. In addition, alternatives suggested by the public and alternatives from previous studies (the *Bakersfield Systems Study* [2002] and the *Final Route 58 Route Adoption Project, A Tier I Environmental Impact Statement/Environmental Impact Report* [2001]) were also evaluated as part of the initial screening. Even though the earlier studies rejected some of these alternatives, Caltrans determined they should be subject to the initial screening criteria as potential alternatives for the Centennial Corridor project. A total of 19 alternatives were reviewed as part of the initial screening process. Eighteen of these alternatives proposed construction of new roadway alignments (see Figure 2-7 provided in Volume 2), and one alternative proposed transportation system management and transit improvements.

The initial screening process done in 2008 determined that Alternatives A, B, C, and D, the No-Build Alternative, and the Transportation Systems Management/ Transportation Demand Management/Transit Alternative (Alternative M) warranted further study. These alternatives all received further analysis and additional screening.

If an alternative does not achieve the intended purpose established for the project, it does not make sense to continue spending resources evaluating it, so it is eliminated from further consideration. Another factor in screening alternatives was the cost. An alternative was eliminated if the cost substantially exceeded the available funding.

Since 2008, more detailed engineering design and preliminary technical studies have been done to provide more information for each alternative carried forward after the initial screening. As a result of this more-detailed evaluation, Alternatives D and M were withdrawn from further consideration (see Table 2-3). These two alternatives, which received more detailed evaluation but were not carried forward, are discussed in more detail below.

Alternative D: This alternative would have built a new freeway that would connect existing State Route 58 to the Westside Parkway along an alignment east of State Route 99. Alternative D extended north from the vicinity of the existing Union Avenue (State Route 204) interchange on State Route 58. The route would parallel Union Avenue for about 1 mile and then turn west and run parallel to the BNSF Railway railroad tracks for about 3 miles. It would connect to the Westside Parkway in the vicinity of Mohawk Street, following an alignment similar to what is shown for Alternatives B and C.

Operational problems at the State Route 58/State Route 99 interchange could not be prevented with Alternative D. Interchange spacing would not meet Caltrans' standards. There would not be enough distance for cars to change lanes between on-ramps and off-ramps. Closure of interchanges would result in longer commutes for travelers going to the nearby shopping centers, industrial facilities, neighborhoods, the Kern County Fairground, and the Bakersfield Municipal Airport because there would be no direct access to those uses. Widening Chester Avenue between Truxtun

Avenue and California Avenue would also be required. This would require replacing the existing grade separation at the BNSF Railway rail line (where the road goes under the railroad tracks). Construction of Alternative D would also require a permanently closure of 11th Street, Pershing Street, 10th Street, and 9th Street.

Alternative D would displace the parking lots for Mercy Hospital, Bakersfield City Hall, and some public use parking in downtown Bakersfield. New parking structures would be required to replace the eliminated parking spaces, for an estimated cost of $54 million. Alternative D would also relocate the Bakersfield Fire Department Fire Station, now at the northwestern corner of State Route 58 and Union Avenue.

Alternative D was estimated to cost $1.1 billion to build. This is more than the available funding. Also, the life cycle benefit (benefit that would result over the years of the project) was estimated to be only $658 million. Alternative D was found to be not reasonable or feasible.

Alternative M-Transportation Systems Management/Transportation Demand Management/Transit: Consistent with Caltrans policy, as part of the early screening, an alternative that considers the use of Transportation Systems Management techniques and Transportation Demand Management, combined with transit improvements to meet the travel demand was advanced for further evaluation. Transportation Systems Management attempts to increase the number of peak-hour person-trips by improving existing facilities without major construction. Examples of Transportation Systems Management measures include use of bus turnouts, signal coordination, or minor road widening. Transportation Demand Management attempts to reduce travel demand or redistribute traffic, such as by creating high occupancy vehicle lanes and using changeable signs to notify drivers of delays.

These types of improvements are already included in the 2011 Regional Transportation Plan (Amendment 3) and the Metropolitan Bakersfield Impact Fee Program—Proposed Phase IV Improvement list of projects. Improvements include traffic signal optimization, intersection widening, and bus turnouts to reduce delay and to increase the capacity along eight travel corridors in the vicinity of the Centennial Corridor Project.

Long-range transit planning also assumes more service along Rosedale Highway and Stockdale Highway to reduce the overall vehicular demand in these east-west corridors. The transit improvements would focus mostly on an increase in frequency of service that would result in reduced automobile demand. The 2011 Regional Transportation Plan (Amendment 3) provides for the purchase of 120 full-size buses. This would allow for the use of 100 buses during peak hours, which roughly doubles the service compared to existing transit levels. The highway improvements mentioned above and the improvements to transit service are also assumed for the No-Build Alternative and the build alternatives.

Finally, area-wide transportation demand management strategies being considered as part of the regional planning efforts to reduce travel demand include establishing

parking fees, encouraging carpool formation, and encouraging flextime for employees. In addition, the Kern Council of Governments is currently conducting the *Kern High Occupancy Vehicle/Bus Rapid Transit Study*, which is studying the feasibility of adding high occupancy vehicle lanes to State Routes 58, 99, and 178. Early indications suggest that high occupancy vehicle lanes would not be warranted within metropolitan Bakersfield until after 2040. Though this is not proposed as part of the Centennial Corridor project, all the build alternatives provide sufficient right-of-way in the median for future high occupancy vehicle lanes to be implemented when the demand warrants. This is discussed in detail in Section 4.10 of the *Traffic Study Report for the Centennial Corridor Project.*

The above-mentioned improvements would not adequately meet the project purpose and need of providing route continuity for State Route 58. It would keep the route in its current discontinuous state. In addition, these Transportation Systems Management improvements are assumed as part of the regional network so they are part of the future conditions (2038) for all the alternatives including the No-Build Alternative. So, reliance on only standard Transportation System Management improvements identified above would not function substantially better than the No-Build Alternative.

In light of this determination, an alternative was developed that recommends higher cost improvements that go beyond what is generally considered a Transportation System Management improvement; plus it is less costly than the other build alternatives. This alternative is discussed below.

Generally, Transportation Systems Management focuses on low capital, environmentally responsive improvements that maximize efficiency of existing facilities. However, since there is the need to carry the capacity of a six-lane freeway, the improvements assumed as part of Alternative M are substantially greater than those traditionally proposed for a Transportation Systems Management alternative.

Improvements unique to Alternative M include a proposal to expand State Route 58 (West) (Rosedale Highway) to meet the travel demand. A separate project proposes to widen Rosedale Highway from four lanes to six lanes from State Route 99 to Allen Road. Another future project would widen State Route 58 (West) from Allen Road to State Route 43 from a two-lane to a four-lane facility. Alternative M would expand on these planned improvements by adding grade separations along State Route 58 at the intersections with the highest traffic volumes. By reducing travel delays from cross-traffic, State Route 58 would function as a higher speed, expressway-type facility. Grade separations would be constructed at the following locations:

- State Route 58/Mohawk Street intersection
- State Route 58/San Joaquin Valley Railroad crossing
- State Route 58/Calloway Drive intersection
- State Route 58/Coffee Road intersection

- State Route 58/Allen Road intersection

The capital cost of Alternative M has been estimated as $252 million. Even with these improvements, Alternative M would not adequately meet the project purpose and need of providing route continuity and associated traffic congestion relief for State Route 58. Alternative M would keep State Route 58 in its current discontinuous state. Upgrading Rosedale Highway to a super-arterial, the backbone of Alternative M, would also not result in the level of traffic relief provided by the other build alternatives.

Alternative M would allow Rosedale Highway to attract and accommodate 24,000 additional vehicles using the upgraded route immediately west of State Route 99, 11,000 to 34,000 additional vehicles per day between State Route 99 and Allen Road, and 1,500 vehicles per day just east of State Route 43, when compared to the No-Build Alternative. This would provide some congestion relief by reducing traffic volumes on Hageman Road, Westside Parkway, Stockdale Highway and Ming Avenue.

Planned commercial land uses along Rosedale Highway would benefit from higher drive-by levels of traffic, while residential-serving roadways would benefit from reduced traffic volumes. However, Alternatives A, B, and C would attract between 113,700 to 121,400 vehicles per day in the section west of State Route 99. These alternatives would remove through traffic from east-west local arterial streets, allowing residents to access commercial establishments along these roadways under less congested conditions. Also, compared to the No-Build Alternative, Alternative M would add more than 20,000 vehicles per day to the shared section of State Route 99 and State Route 58.

Alternative M was found to not meet the project’s purpose and need and, therefore, was not carried forward for further evaluation. However, as previously stated, these types of improvements are already included in the 2011 Regional Transportation Plan and the Metropolitan Bakersfield Impact Fee Program.

2.2 Permits and Approvals Needed

Table 2.3 shows the permits, reviews, and approvals required for project construction.

Table 2.3 Project Permits and Approvals

Agency	Permit/Approval	Status
U.S. Fish and Wildlife Service	Section 7 Consultation, as required by the Endangered Species Act for the San Joaquin kit fox	Caltrans was able to initiate the process because the U.S. Fish and Wildlife Service agreed to accept a Biological Assessment that evaluated all three alternatives. The Biological Assessment was submitted to the U.S. Fish and Wildlife Service on April 16, 2013 and formal consultation was initiated on July 22, 2013. A Biological Opinion from the Service on the effects on the San Joaquin kit fox was issued on December 20, 2013.
Federal Emergency Management Agency	Conditional Letter of Map Revision and Letter of Map Revision	During the design phase of the project, coordination with the Federal Emergency Management Agency would be required to ensure there are no improvements that are incompatible with the floodplain.
U.S. Army Corps of Engineers	Section 404 Permit pursuant to the Clean Water Act for filling or dredging "Waters of the United States"	Concurrence on the type of permit or change to the existing permit issued for construction of the Westside Parkway would be required before construction of Centennial Corridor begins.
Federal Highway Administration	Air Quality Conformity Determination	Before approval of the final environmental document, the Federal Highway Administration must make a finding that the project is consistent with the requirements of the Clean Air Act.
California Department of Fish and Wildlife	Section 1602 Agreement for Streambed Alteration pursuant to Section 1600 of the *California Fish and Game Code*	Caltrans will need to finalize a 1602 Agreement before construction begins.
California Transportation Commission	Route Adoption	After approval of the final environmental document, the California Transportation Commission would be required to approve the route adoption for State Route 58. If a new alignment is selected, the current alignment from Allen Road to Interstate 5 would be relinquished to the local jurisdictions.
State Historic Preservation Officer	Memorandum of Agreement	Coordination with the State Historic Preservation Officer regarding the effect on historic resources would be required before the final environmental document. Should either Alternative A or B be selected, a Memorandum of Agreement outlining measures to minimize harm to the resources would be required.
California Transportation Commission, Caltrans and the City of Bakersfield	Transfer Agreement	The City of Bakersfield and Caltrans would enter into an agreement to transfer the Westside Parkway to the state to be designated as State Route 58. This would require the City Council and the California Transportation Commission to adopt the agreement. Coordination with the commission would occur once the project has been approved.
	Freeway Agreement	A freeway agreement which specifies the planned traffic circulation features of the proposed facility will be developed once the project is approved.

Table 2.3 Project Permits and Approvals

Agency	Permit/Approval	Status
Caltrans and the City of Bakersfield	Cooperative Agreement (construction phase)	A cooperative agreement between Caltrans and the City of Bakersfield outlining their respective responsibilities for project implementation would be executed before construction begins.
	Agreement for Park Use and Modification	Caltrans and the City have coordinated on improvements required to the local park facilities to offset any effects from the project. An agreement would be drafted once the project has been approved. The details of the agreement would be included in the final environmental document.
	Maintenance Agreement	An agreement between Caltrans and the City of Bakersfield would identify responsibility for maintenance of enhanced aesthetic features, including graffiti removal.
Caltrans and the County of Kern	Maintenance Agreement	An agreement between Caltrans and the County of Kern would identify responsibility for maintenance of the intersection improvements at Stockdale Highway and State Route 43.
City of Bakersfield	Encroachment Permits Relinquishment of street right-of-way Update General Plan	The City of Bakersfield would need to issue encroachment permits to allow the contractor to change local streets within the City jurisdiction. For those roadways that are being realigned, closed, or made into cul-de-sacs, the City would need to relinquish the roadway right-of-way. Once the State Highway System is changed, the updated plan should be reflected in the local General Plan and, a change to the Master Plan of Bikeways would be required for Alternative B.
County of Kern	Encroachment Permit Update General Plan	The County of Kern would need to issue encroachment permits to allow the contractor to change local streets within the County of Kern jurisdiction. Once the State Highway System is changed, the updated plan should be reflected in the local General Plan.

Table 2.3 Project Permits and Approvals

Agency	Permit/Approval	Status
State Water Resources Control Board and the Central Valley Regional Water Quality Control Board, Region 5	Storm Water Discharge Permit National Pollutant Discharge Elimination System Coordination	Compliance with (1) the Statewide National Pollutant Discharge Elimination System Permit for Storm Water Discharge from the State of California, Department of Transportation Properties, Facilities, and Activities (Order Number 2012-0011-DWQ, NPDES No. CAS000003) and (2) the National Pollutant Discharge Elimination System General Permit for Storm Water Discharge Requirements for Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ, NPDES No. CAS000002, as amended by 2010-0014-DWQ).
	Section 401 Certification pursuant to the Clean Water Act	Certification of compliance would be obtained before construction.
	Discharge of Construction Water (Dewatering)	If dewatering is expected for the preferred alternative, the contractor must fully conform to the requirements specified in Order No. R5-00-175, General Waste Discharge Requirements for Discharges to Surface Water which Pose an Insignificant (*De Minimus*) Threat to Water Quality, from the Central Valley Regional Water Quality Control Board.
	Municipal Separate Storm Sewer System Permit	The Central Valley Regional Water Quality Control Board has issued waste discharge requirements for the County of Kern and the City of Bakersfield for urban storm water discharges (Order No. 5-01-130, National Pollutant Discharge Elimination System No. CA00883399). During subsequent design phases, the latest version of the Storm Water Management Plan/Standard Urban Storm Water Mitigation Plan developed and implemented by the County of Kern and the City of Bakersfield must be evaluated to determine which requirements apply to a road and highway project such as the Centennial Corridor.
San Joaquin Valley Air Pollution Control District	Dust Control Permit and Approved Air Impact Assessment per Rule 9510, Indirect Source Review Rule 8210, Limits to fugitive particulate matter emissions during construction activities	Coordination at a staff level has occurred as part of preparation of the Air Quality Study Report. The permit would be acquired after project approval and before construction.
Public Utilities Commission	Relocation of the electrical transmission towers would require Public Utilities Commission authorization	Coordination with Public Utilities Commission staff would be required as part of the design effort for the relocation of the electrical transmission towers. No coordination with the commission or the utility company has occurred to date. Coordination would begin during the design phase of the project.
	Approval for the construction of new or modification of existing, highway-rail crossings (General Order 88B and 26D) (Alternative C)	Coordination has not begun with the Public Utilities Commission. This coordination would occur if Alternative C is selected as the preferred alternative.

Table 2.3 Project Permits and Approvals

Agency	Permit/Approval	Status
California Department of Conservation, Department of Oil, Gas, and Geothermal Resources	Abandonment of oil wells would need to be done in compliance with Department of Conservation requirements	Coordination has not begun. Before construction, a Notice of Intent would be filed with the Department of Conservation, Division of Oil, Gas and Geothermal Resources, and an abandonment plan would be prepared for all oil wells that would be abandoned.
BNSF Railway, Union Pacific Railroad, and San Joaquin Valley Railroad	Acquisition of right-of-way or easement and changes to existing agreements for work in the rail corridor	Coordination with the railroad would occur prior to construction.
Central Valley Flood Protection Board	Approval of flood control improvements and floodplain encroachment	Coordination would begin during the design phase of the project.

Chapter 3 Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures

This chapter discusses project impacts on human, physical, and biological environments within the study area defined for each environmental resource.

Analysis of each environmental factor includes discussion of the affected environment (existing environmental conditions), environmental consequences (such as construction impacts, permanent impacts, cumulative impacts, and indirect impacts), and avoidance, minimization, and mitigation measures for each of the three build alternatives and the No-Build Alternative. Due to the extent of impacts expected to occur during project construction, a separate section is provided to describe potential construction related impacts and recommended mitigation measures (Section 3.6, Construction Impacts).

For the California Environmental Quality Act, the environmental conditions existing in 2008, when the Notice of Preparation was issued and when the traffic counts were conducted, served as the baseline for impact analysis evaluated in this environmental document. For the National Environmental Policy Act, the No-Build Alternative served as the baseline for determining the project's impacts.

Impacts for the build alternatives were analyzed based on the assumption that construction would begin in 2016 and would last for two and a half years (as discussed in Section 3.6, Construction Impacts). To minimize repetition, when the effects of the build alternatives are the same, they are presented at the beginning of the environmental consequences section (under "Common to All Build Alternatives"). The analysis then presents an evaluation of effects that are unique to the specific alternatives. For some topical issues, the impacts are the same for all the alternatives, and specific alternative analysis is not required. In addition, to help focus the analysis, Segment 2 analysis is presented only for those topics where there is the potential for impacts. Since the improvements in Segment 2 are limited to the addition of auxiliary lanes and other minor lane changes, there would be no affects for most topical areas. The topics where these types of changes may affect the analysis are traffic, air quality, and noise.

When project effects are found to be substantial and adverse, then mitigation measures are developed to reduce the impacts to the extent possible. The Avoidance, Minimization and/or Mitigation Measures apply to all build alternatives, unless specifically identified as only being applicable to certain alternatives.

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

- ***Timberlands (forest resources).*** The project is in an urban area. There is no timberland in the project area (field visit March 26, 2008).
- ***Coastal Zone.*** The project is not within a coastal zone and is not within the jurisdiction of the California Coastal Commission. Kern County is an inland county and is not along the coast.
- ***Wild and Scenic Rivers.*** No designated wild and scenic rivers are in the project area (National Wild and Scenic Rivers System map, last updated on August 18, 2011).
- ***Mineral Resources.*** The project site is not within an area designated as a mineral resource zone by the California Mineral Land Classification/Designation Program, the California Geological Survey, or the State Mining and Geology Board.

3.1 Human Environment

3.1.1 Land Use

3.1.1.1 Existing and Future Land Use

This section addresses potential impacts to existing and planned land uses in the project area that could result from implementation of the project alternatives. The study focuses on Segment 1 mostly because Segments 2 and 3 have been previously evaluated in their respective environmental documents and there have been no changes to the general settings of the area since the environmental documents for Segments 2 and 3 were certified.

Affected Environment

The information in this section is from the *Community Impact Assessment* (September 2013) prepared for this project.

Recent development trends in Bakersfield have focused mostly on residential projects. Between 2000 and 2011, the City of Bakersfield Building Division issued 28,410 residential building permits. About 98 percent of these permits were for single-family residences. It is anticipated that new development would occur mostly in the southwest, northwest, and northeast edges of Bakersfield; however, there are development constraints in the northeast due to topography, seismic zone locations, inadequate accessibility, and petroleum production. Within the surroundings of the immediate study area, development trends are limited to infill residential and commercial developments and light industrial developments on the north side of the Kern River. Table 3.1 shows recently completed or planned commercial and larger residential developments in the general study area, as well as in the downtown Bakersfield area.

Table 3.1 Recent and Planned Local Development Projects

Name	Proposed Uses	Status
Bakersfield Commons	A 255-acre project east and west of Coffee Road between Brimhall Road and Rosedale Highway. Allows 1,400,000 square feet of retail commercial, 600,000 square feet of office commercial, 345 multi-family homes, and 80 single-family homes.	Approved in August 2010, but no current construction.
Stockdale Ranch	On the south side of Stockdale Highway near Heath Road. Allows 3,583 residential units and 941,700 square feet of commercial/business park uses on a 564-acre site.	Approved in June 2010, but no current construction. Two tentative subdivision maps have been submitted to the City.
Saco Ranch Commercial Center	Southeast and southwest of the Coffee Road/7th Standard Road intersection. Allows 1,459,500 square feet of retail commercial, 332,000 square feet of office uses, and 1,376,496 square feet of industrial uses. The center is a 327-acre project.	Approved in August 2010, but no current construction.
Crossroads Plaza Commercial Center	On the west side of Gosford Road between Panama Lane and Harris Road. Allows retail development (138,621 square feet) and a community retail center (605,008 square feet). The Crossroads Plaza project is a 69.84-acre project.	Approved December 2010. No current construction.
South Mill Creek Retail, Entertainment, and Housing Project	A commercial village of 5.5 acres proposed west of Mill Creek Linear Park in downtown Bakersfield. Creek View Villas (36 condos) and City Place (70-unit apartment), with Mill Creek Courtyard Apartments planned.	14 units of the Creekview Villas have been placed on the market for sale.
Maya Cinemas; Additional Commercial Businesses	16-screen movie theater; 25,000 square feet of retail and commercial space planned in downtown Bakersfield.	Theater complete; remaining commercial enterprises not yet developed.
San Joaquin Community Hospital Avenue	Community hospital to be located at 2620 Chester, downtown Bakersfield.	The medical office building at 2620 Chester Avenue has been built and is occupied. 60,000-square-foot medical facility at 2700 Chester Avenue is currently under construction.
Source: Developed from the *Community Impact Assessment* 2013.		

Segment 1 of the Centennial Corridor sits in the city of Bakersfield between the Kern River and downtown Bakersfield. The study area of Segment 1 generally extends to

Rosedale Highway on the north, Cottonwood Avenue on the east, Ming Avenue to the south, and Coffee Road to the west. Figure 3-1 (provided in Volume 2) shows existing land uses along this segment, including residential, commercial, industrial, recreational, resource/utility, agricultural, undeveloped/vacant, and government uses. (To make the document easier to read, most of the figures that are 11 inches by 17 inches are provided in Volume 2 in the section labeled "Figures.")

Future land use designations surrounding the alternatives for Segment 1 are identified in the *Metropolitan Bakersfield General Plan* (2002, as amended) and the *Kern County General Plan* (2007) as shown in Figure 3-2 (provided in Volume 2).

The existing land uses in the Centennial Corridor study area are varied and include a combination of low-density residential, commercial, industrial, transportation and utilities, and recreational. The study area contains several well-established residential neighborhoods, with commercial lands situated mostly along Stockdale Highway and California Avenue, and next to State Route 99. Stockdale Highway hosts many of the local-serving retail shops and commercial enterprises, plus small offices providing various community services. Health-related offices, houses of worship, educational facilities, and many neighborhood-serving businesses and services also sit within or next to residential areas. Utilities and transportation land uses are located throughout the study area and include existing roads and utility rights-of-way. Industrial land uses are located mostly on the north side of the Kern River. Recreational land uses are spread throughout the study area. There is little remaining open space/vacant land in the project areas of Segments 1 and 2; most open space/vacant land is west of the Kern River. Public service land uses, mainly Kern County government facilities, are largely concentrated within the downtown Bakersfield area.

Residential neighborhoods consist mostly of detached single-family units built from the 1950s through the 1970s. Newer single-family residences are farther west, closer to California State University, Bakersfield and south of Ming Avenue.

Environmental Consequences

Common to All Build Alternatives

Implementation of Segment 1 would result in a conversion of existing land uses to a transportation use. This conversion is consistent with established plans and policies and is examined in the following section. Indirect impacts to land use patterns (changes in regional development and growth-related changes) are not expected with implementation of the build alternatives. This is discussed further in Section 3.1.2, Growth.

The area subject to right-of-way acquisition is urbanized, containing few vacant parcels. It is possible that the presence of a new major transportation corridor could result in localized changes in adjacent land parcels. However, the right-of-way acquisition process would take into account this potential, and the post-project land use pattern is expected to foster continuing stability to those land uses through such methods as acquisition of unusable small remnant parcels and providing adequate

buffer space for sensitive land uses. Given these considerations, implementation of any build alternative would not result in indirect adverse effects on land use.

Alternative A

Right-of-way and construction easements required to build the project would necessitate partial and full acquisitions of a large number of parcels. According to Appendix B of the *Community Impact Assessment* (September 2013) prepared for this project, 404 parcels (about 288 acres of land) would be affected under this alternative.

Alternative B

According to Appendix B of the *Community Impact Assessment* (September 2013) prepared for this project, Alternative B would potentially affect 422 parcels (about 292 acres of land).

Alternative C

According to Appendix B of the *Community Impact Assessment* (September 2013) prepared for this project, Alternative C would potentially affect 340 parcels (about 324 acres of land).

No-Build Alternative

The No-Build Alternative would not lead to physical improvements that would convert existing land uses to transportation uses. The effects of other transportation improvement projects that are being planned within the project area would be analyzed in separate environmental documents.

Avoidance, Minimization, and Mitigation Measures

There are no available reasonable mitigation measures that would reduce impacts on land use. The project design would, however, be carried out to minimize the right-of-way impact to the extent feasible.

3.1.1.2 Consistency with State, Regional, and Local Plans

The information in this section is from the *Community Impact Assessment* (September 2013) prepared for this project.

Affected Environment

Adopted plans that guide development in the project study area include the Kern Council of Governments Regional Transportation Plan, the Kern County General Plan, the Metropolitan Bakersfield General Plan, the Metropolitan Bakersfield Habitat Conservation Plan, the Kern County Bicycle Facilities Plan, and the City of Bakersfield Consolidated Plan. The following discussion briefly describes the goals, policies, and/or objectives of these plans that are applicable to the Centennial Corridor project.

State Route 58 Corridor System Management Plan (2011)

The *State Route 58 Corridor System Managemen*t *Plan* is the long-range planning document that identifies recommended strategies plan to guide transportation

decisions and investments for the State Route 58 Corridor. The plan identifies the Centennial Corridor as an integral part of the Bakersfield Beltway System. The three build alternatives evaluated in this environmental document are shown as alignment options for the Centennial Corridor.

Kern Council of Governments Regional Transportation Plan (2011)

The Kern Council of Governments is an association of city and county governments created to address primarily regional transportation issues. It is the designated Metropolitan Planning Organization and Regional Transportation Planning Agency for Kern County. The Regional Transportation Plan is a long-term (24-year) plan that focuses on all travel modes and contains a list of projects intended to carry out the objectives of the plan. In 2010, the Kern Council of Governments issued the 2011 Regional Transportation Plan, which contains programs and projects for congestion management, transit, airports, bicycles and pedestrians, roadways, and freight movement.

At the core of the 2011 Regional Transportation Plan are seven goals: mobility (most important), accessibility, reliability, efficiency, livability, sustainability, and equity.

The Regional Transportation Plan identifies the Centennial Corridor project as part of the Bakersfield Beltway System, which is included in the list of financially constrained major highway improvements for the period 2011-2015. See the *Community Impact Assessment* (September 2013) for additional information on the goals and policies of the plan.

Kern County General Plan (2004, update 2009)

The Kern County General Plan was prepared to guide future development in Kern County. The plan was originally adopted on June 15, 2004. The plan has since been updated several times with the most recent update being adopted on September 22, 2009. The plan includes seven required elements, including land use, circulation, housing, conservation, open space, noise, and safety. The land use, conservation, open space, and circulation elements of the plan include issues affecting the Centennial Corridor project. The study area of the land use, conservation, and open space elements includes unincorporated areas of Kern County. The circulation element of the plan includes locally desired transportation improvements. According to the circulation element of the plan, Kern County and the City of Bakersfield have jointly adopted the circulation element of the 2002 *Metropolitan Bakersfield General Plan.* The Kern River Plan Element is an integral part of the City of Bakersfield General Plan and the Kern County General Plan, and is addressed in the Metropolitan Bakersfield General Plan subsection (below).

Kern County Bicycle Facilities Plan (2001)

Adopted in October 2001, the Kern County Bicycle Facilities Plan is intended to guide development of bicycle transportation facilities in an orderly and timely fashion within the region. It is incorporated by reference as part of the 2011 Kern County Regional Transportation Plan, Amendment 3. The plan discusses issues that affect the

Centennial Corridor project's consistency analysis because the Kern River bridge would pass over a portion of the hiking and biking trail running next to the Kern River Parkway. The plan does not include any specific improvements other than an extension of a bicycle path to Lake Ming, which lies outside the project study area.

Metropolitan Bakersfield Habitat Conservation Plan (1994)

The City of Bakersfield and Kern County, in cooperation with the resource agencies, developed the Metropolitan Bakersfield Habitat Conservation Plan to mitigate the cumulative loss of native vegetation that has occurred or could occur in the planning area. The purpose of the Metropolitan Bakersfield Habitat Conservation Plan is to provide long-term protection of natural vegetation communities and wildlife diversity while allowing compatible land uses and appropriate development and growth. Under the plan, proposed projects within the planning area pay mitigation fees to fund the purchase and maintenance of habitat land to compensate for the effects of urban development on endangered species habitat. The plan addresses 11 plant species and 7 wildlife species.

Metropolitan Bakersfield 2010 General Plan (2002, update 2007)

Adopted in 2002 and last updated in 2007 (with no change to the Land Use Element), the *Metropolitan Bakersfield General Plan* was developed as a joint effort between the City of Bakersfield and the County of Kern. The planning document is used as the main tool through which the City makes decisions affecting growth and allocation of resources, with the goal of ensuring that individual decisions conform to long-range land use plans for the city. Between 2007 and 2010, a series of Town Hall meetings and Joint City/County Planning Commission workshops were held to discuss issues related to updating the Metropolitan General Plan. But as of December 2013, no local governmental approval action had occurred. The plan consists of 10 elements, which include land use, circulation, housing, conservation, open space, parks, noise, safety, public services and facilities, and a tenth focusing specifically on the Kern River. The land use, conservation, open space, circulation and the Kern River Plan elements of the plan discuss issues affecting the plan consistency analysis. The study area of the plan's Land Use Element included the incorporated areas of the City of Bakersfield.

The plan's Circulation Element includes local transportation improvements; it states that areas surrounding State Route 58, State Route 99, California Avenue, and Stockdale Highway are operating nearly at capacity for traffic and are causing congestion issues and delays. In the years since adoption of the plan, Bakersfield has continued to grow, which has put more vehicles on the local roads. To reduce the amount of congestion in the city, both an east-west expressway and north-south expressway are recommended, but the plan discusses these recommendations at only a conceptual level.

The plan references three planned freeways to reduce the amount of congestion in the city, including the Crosstown Freeway that extends from State Route 178 to State Route 99 south of Bakersfield; the Westside Parkway, which extends from the

Crosstown Freeway across the Kern River; and the West Beltway, which would link State Route 119 with 7th Standard Road.

Both the Metropolitan Bakersfield 2010 General Plan and the Kern County General Plan were jointly adopted in 1985 and updated in 2007. It provides overall planning guidance for the Kern River, which functions primarily as a floodway and secondarily for other purposes (including recreation). The Kern River Plan Element formed the basis for the later development of the Kern River Parkway (June 1988). The plan extended from the mouth of the Kern River, about 5.5 miles east of Ming Lake, to the crossing of Interstate 5 and the Kern River, for a length of roughly 35 miles, covering an area of 41,250 acres.

Environmental Consequences

This section describes the consistency of the project alternatives with applicable state, regional, and local plans that have been adopted for the study area. Specific policies are discussed in Tables 3.2 and 3.3.

State Route 58 Corridor System Management Plan (2011)

The build alternatives are consistent with the *State Route 58 Corridor System Management Plan*. The Centennial Corridor is identified as a component of the Bakersfield Beltway System, which is the foundation for improving the transportation network in metropolitan Bakersfield. All three build alternatives are shown as the potential options for the “new alignment” portion of State Route 58. The plan also assumes the use of Westside Parkway for the extension to Heath Road. The No-Build Alternative would not provide this required connection and would therefore, not be consistent with the long-term planning strategies for State Route 58.

Kern Council of Governments Regional Transportation Plan

According to the 2011 Regional Transportation Plan, Amendment 3 (Kern Council of Governments 2012), which includes updates from the Thomas Roads Improvement Program, the Centennial Corridor is consistent with the plan. The project is designated as a major highway improvement in the constrained program of projects and is slated for environmental review and design through 2015; however, the exhibit map showing the projects through 2015 in the plan shows only Alternative C of Segment 1 of the Centennial Corridor project. If Alternative A or Alternative B is selected as the build alternative, the plan must be updated after the California Environmental Quality Act process for the project is completed.

Kern County General Plan (2004, update 2009)

The Centennial Corridor is not shown on the Circulation Element’s Major Roads and Highways Map. However, if a build alternative is selected, the route would be added to the State Highway System. If a build alternative is not selected, Segment 2 and Mohawk Avenue north to the existing State Route 58, would still be added to the State Highway System. Since the Circulation Element map reflects the State Highway System, this inconsistency would be corrected. From a policy perspective, the project is consistent with the goals of the Circulation and Land Use elements of the *Kern*

County General Plan. The Circulation element acknowledges that "[t]he County is uniquely dependent on State Highway construction and retrofits to satisfy inter-city road travel." Consistency with applicable policies of the *Kern County General Plan* is shown in Table 3.2. Consistency with applicable policies for the Kern River Plan Element is discussed under the Metropolitan Bakersfield General Plan subsection below.

Table 3.2 Consistency of the Centennial Corridor with the Kern County General Plan

Policy/Objective/Goal	Project Consistent with Plan, Goal, Objective, or Policy				Consistency Analysis
	A	B	C	No-Build	
Circulation Element					
Goal: To make certain that transportation facilities needed to support development are available. To ensure that these facilities occur in a timely manner so as to avoid traffic degradation.	Yes	Yes	Yes	No	The build alternatives would provide increased accessibility through Bakersfield and would also support planned development as allowed by the City. The project would also occur in a timely manner because funding is already secured. The No-Build Alternative would not produce needed facilities.
Goal: Kern County intends to provide plans for circulation infrastructure in support of the Land Use, Open Space, and Conservation Element.	Yes	Yes	Yes	No	The build alternatives would improve east-west connectivity and circulation on local streets and also would support other elements of the plan to improve infrastructure throughout the project area. The project alternatives would not conflict with other elements of the plan and would minimize impacts or conflicts. The No-Build Alternative would not improve circulation infrastructure beyond minor local improvements.
Goal: To plan for transportation modes available to all segments of the population, including people with restricted mobility.	Yes	Yes	Yes	No	The build alternatives would improve connectivity and accessibility through new highway facilities and would be designed to not preclude the future introduction of other transportation modes. The No-Build Alternative would not improve connectivity and would only be able to address other modes operating on the local street system.

Table 3.2 Consistency of the Centennial Corridor with the Kern County General Plan

Policy/Objective/Goal	Project Consistent with Plan, Goal, Objective, or Policy				Consistency Analysis
	A	B	C	No-Build	
Goal: Maintain a minimum Level of Service D for all roads throughout the County.	Yes	Yes	Yes	No	The build alternatives would improve local east-west circulation and improve the level of service on major roads in the city of Bakersfield. The No-Build Alternative would result in continuing deteriorating levels of service on local roads in the area. Some roads would have future service above level D. The project is considered generally consistent with the goal, as it provides for major improvements overall.
Goal: Coordinate with Caltrans regarding various transportation developments within the County.	Yes	Yes	Yes	Yes	The project is being developed in partnership between Caltrans and the City of Bakersfield. The No-Build Alternative is one option being considered.
Land Use Element					
Policy: Coordination and cooperation would be promoted among the County, the incorporated cities, military bases, and the various special districts where their planning decisions and actions affect more than a single jurisdiction.	Yes	Yes	Yes	Yes	The project's decision-making process would follow procedures that require coordination with all affected agencies including the County, the City of Bakersfield, and other agencies. The No-Build Alternative is a possible choice in that process.
Goal: Conserve prime agriculture lands from premature conversion.	Yes	Yes	Yes	Yes	Segment 1 of the Centennial Corridor would sit in an urbanized area and would not convert agriculture uses to developed uses.
Source: Developed from the *Community Impact Assessment* 2013.					

Kern County Bicycle Facilities Plan (2001)

The Kern County Bicycle Facilities Plan supports planning aimed to encourage increased levels of biking and provides for an easily accessible bicycle system within the region. As identified in the *Community Impact Assessment* (September 2013), the project therefore is not entirely consistent with the 2001 Kern County Bicycle Facilities Plan.

Metropolitan Bakersfield Habitat Conservation Plan (1994)

Because Caltrans is not a signatory to the Metropolitan Bakersfield Habitat Conservation Plan, a Section 7 Consultation pursuant to the Federal Endangered Species Act is being carried out between Caltrans and the U.S. Fish and Wildlife Service to obtain concurrence on special-status species impact determinations and avoidance, minimization, and mitigation measures proposed to offset impacts. A Biological Assessment has been submitted to the U.S. Fish and Wildlife Service on April 16, 2013 and formal consultation was initiated on July 22, 2013. A Biological Opinion from the U.S. Fish and Wildlife Service on the effects on the San Joaquin kit fox was issued on December 20, 2013.

Metropolitan Bakersfield 2010 General Plan (2002, update 2007)

The Crosstown Freeway, which would extend the Westside Parkway into downtown, is shown on the *Metropolitan Bakersfield General Plan.* As identified in Table 3.3, each of the three build alternatives has components that are consistent and inconsistent with goals and policies. From the standpoint of safety and efficiency, Alternatives A, B, and C would each be consistent; however, because these alternatives would also encroach on residential neighborhoods, they would be inconsistent, before mitigation, with several goals and policies, mainly as they relate to noise impacts to sensitive land uses (for example, residential areas), quality of life, and compatibility with existing land uses. The project has also been designed to be consistent with the relevant policies and goals of the Kern River Plan Element.

Table 3.3 Consistency of the Centennial Corridor with the Metropolitan Bakersfield General Plan

Policy/Objective/Goal	Project Consistent with Plan, Goal, Objective, or Policy				Consistency Analysis
	A	B	C	No-Build	
Circulation Element					
Goal: Provide a safe and efficient street system that links all parts of the area for movement of people and goods.	Yes	Yes	Yes	No	The build alternatives would improve local east-west circulation and increase interregional trade. The project would provide interregional and regional connectivity for east-west traffic traveling within metropolitan Bakersfield and Kern County and would reduce regional commute time through a major corridor. The No-Build Alternative would not provide such improvements.
Goal: Provide for safe and efficient motorized, non-motorized, and pedestrian traffic movement.	Yes	Yes	Yes	No	The build alternatives would improve operations and safety for all modes of traffic. Sidewalks and crosswalks would be provided at all intersections to facilitate the movement of non-motorized and pedestrian traffic. Existing

Table 3.3 Consistency of the Centennial Corridor with the Metropolitan Bakersfield General Plan

Policy/Objective/Goal	Project Consistent with Plan, Goal, Objective, or Policy				Consistency Analysis
	A	B	C	No-Build	
					non-motorized routes would be maintained. In some locations, pedestrian circulation could become more circuitous, but safe routes would be provided by each alternative. The No-Build Alternative would not provide improvements for motorized traffic other than on local streets.
Goal: Minimize the impact of truck traffic on circulation and on noise-sensitive land uses.	No	No	No	No	The build alternatives would provide additional capacity and a continuous route along State Route 58 to Interstate 5 to accommodate truck traffic passing through the city, which would channelize truck traffic to a new route. Noise increases would occur, requiring abatement. The No-Build Alternative would not provide an opportunity for addressing truck movement.
Goal: Provide a street system that creates a positive image of Bakersfield and contributes to residents' quality of life.	Yes	Yes	Yes	No	The build alternatives would improve connectivity and provide additional capacity to roadways in Bakersfield. Some existing east-west streets and roads that are now overburdened would become less so with the project. The No-Build Alternative would not provide these benefits.
Goal: Provide a system of freeways which maintains adequate travel times in and around the metropolitan area.	Yes	Yes	Yes	No	The build alternatives would improve local east-west circulation and reduce regional and commercial commute time by helping to separate local and regional traffic; the No-Build Alternative would not.
Goal: Provide a local street network that contributes to the quality and safety of residential neighborhoods and commercial districts.	Yes	Yes	Yes	No	Segment 1 of the Centennial Corridor project would increase regional mobility and reduce traffic on the local street system, which would improve operations and safety in residential neighborhoods and commercial districts. Depending on the alternative, some road closures would be required; however, the local street network would benefit

Table 3.3 Consistency of the Centennial Corridor with the Metropolitan Bakersfield General Plan

Policy/Objective/Goal	Project Consistent with Plan, Goal, Objective, or Policy				Consistency Analysis
	A	B	C	No-Build	
					through increased connectivity throughout the region. The No-Build Alternative would continue to degrade the local street system.
Goal: Develop and maintain a circulation system that supports the land use plan shown in the general plan.	Yes	Yes	Yes	No	The project would improve local east-west circulation for the overall Bakersfield area, but would require conversion of existing land uses to transportation use. Overall, the project would accommodate goals and policies of the plan by creating a circulation system that allows for orderly development over time with acceptable circulation patterns and travel times. The No-Build Alternative would not provide support to the general plan.
Goal: Provide a continuous easily-accessible bikeway system within the metro areas	Yes	Yes	Yes	Yes	Alternative A would result in closures of streets that would eliminate existing local access used by bicyclists and would result in the increase of neighborhood travel distances. Alternative B would affect a planned Class 3 bike route designated on the Bikeway Master Plan. The route would need to be modified on the City of Bakersfield Bikeway Master Plan. Alternative C and the No-Build Alternative would not directly affect the pedestrian and bicycle networks.
Land Use Element					
Goal: Accommodate new development which captures the economic demands generated by the marketplace and establishes Bakersfield's role as the capital of the southern San Joaquin Valley.	Yes	Yes	Yes	No	The project would improve local east-west circulation and reduce congestion to accommodate existing and planned land uses in accordance with adopted growth projections and land use plans. The No-Build Alternative would not address economic conditions.

Table 3.3 Consistency of the Centennial Corridor with the Metropolitan Bakersfield General Plan

Policy/Objective/Goal	Project Consistent with Plan, Goal, Objective, or Policy				Consistency Analysis
	A	B	C	No-Build	
Goal: Accommodate new development which is compatible with and complements existing land uses.	Yes	Yes	Yes	Yes	The Centennial Corridor study area is fairly built out; new developments and infill projects are directed by the adopted General Plan. Availability of the continuing east-west Centennial Corridor would not be a main factor leading to new development, but would provide support to the planned developments that are directed by the General Plan. Without the project, the planned developments would still occur, but would be constrained by the lack of continuing east-west freeway.
Policy: Retain existing residential neighborhoods as designated on the Land Use Plan and allow for the in-fill of residential land uses which are compatible with the scale and character of the surrounding neighborhood.	No	No	No	Yes	Alternatives A, B, and C would each require new right-of-way that would affect the character of residential neighborhoods by displacing residents. Alternatives A and B would bisect the West Park neighborhood. Alternative C would not bisect that neighborhood, but would require periphery displacements. Alternative A would have a higher number of displacements when compared to Alternatives B and C. The No-Build Alternative would have no effect on neighborhoods.
Kern River Plan Element					
Goal: To provide present and future generations of residents in the Bakersfield metropolitan area and surrounding regions means of access to the Kern River for public use and enjoyment and provide for preservation of native plants, wildlife, and cultural resources of the river area while, at the same time, providing for protection of private property rights.	No	Yes	Yes	Yes	The build alternative would require a crossing over the Kern River. Alternative A would require the removal of the Kern River Park. Alternatives B and C would use former private industrial property purchased by the City for the Westside Parkway.
Source: Developed from the *Community Impact Assessment* 2013.					

Avoidance, Minimization, and Mitigation Measures

The project has been designed to minimize inconsistencies with state, regional, and local plans and programs to the extent feasible. During final design, effort would be made to further minimize construction and operational impacts to existing and planned land uses. If Alternative B is selected, the Class 3 bike route map will be modified to reflect changes to the bicycle route (see Mitigation T-3 in Section 3.1.6, Traffic and Transportation/Pedestrian and bicycle Facilities, of this report). If the project would result in noise impacts on adjacent land uses, the impacts would be abated through soundwalls, when feasible and reasonable. Property acquisitions would be provided fair and just compensation under the Uniform Relocation Act of 1987, as amended. Remaining land parcels would be reconfigured to restore functional areas and neighborhoods in accordance with the planning procedures set forth by the City of Bakersfield Planning Department. No other avoidance, minimization, and mitigation measures are proposed related to land use and planning.

3.1.1.3 Parks and Recreation

Affected Environment

The information in this section is from the *Community Impact Assessment* (September 2013) and the *Section 4(f) Evaluation* (April 2014) prepared for this project.

The project area for parks and recreational facilities includes those resources within a one-half-mile radius of the project. Figure 3-3 (provided in Volume 2) shows the facilities within the project area. Based on the preliminary engineering design, the effects on park use from Segment 1 alternatives are summarized in Table 3.4.

Table 3.4 Effects on Parks by Alternatives

Site	Alternative A	Alternative B	Alternative C
Beach Park	No impact	No impact	No impact
Belle Terrace Park	No impact	No impact	No impact
Centennial Park	No impact	No impact	No impact
Kern River Parkway	Permanent impact up to 6.28 acres	No impact	No impact
Jastro Park	No impact	No impact	No impact
Saunders Park	No impact	No impact	Permanent impact up to 1.95 acres of developed park and 1.32 acres of undeveloped area
Wayside Park	No impact	No impact	No impact
Yokuts Park	No impact	No impact	No impact
Source: Developed from the *Section 4(f) Evaluation* 2014 (provided in Appendix B, Volume 2).			

Beach Park

The 31.5-acre Beach Park sits at 3400 21st Street in the area bound by the Kern River on the west, 24th Street on the north, Oak Street on the east, and 21st Street on the

south. Beach Park is owned by the City of Bakersfield and is administered by the Recreation and Parks Department.

Belle Terrace Park

The 19.8-acre park sits between Madison Street and Cottonwood Road at 1000 East Belle Terrace. The park is bordered by residential property to the north and agricultural land to the east, south, and west. Belle Terrace Park is in the city of Bakersfield, but is owned and administered by Kern County Department of Parks and Recreation.

Centennial Park

Centennial Park is in Bakersfield just north of Stockdale Highway at 400 Montclair Street. This 9.76-acre park is bordered by residential land uses on all sides. The park is owned by the City of Bakersfield and administered by the Recreation and Parks Department.

Kern River Parkway

The Kern River Parkway is within the city of Bakersfield and Kern County. Within Bakersfield, the Kern River Parkway consists of about 1,400 acres and extends along the Kern River from Manor Street on the east and the Stockdale Highway Bridge on the west. Existing and proposed recreation areas account for 220 acres. The main river channel, habitat areas (including areas for educational studies), and recharge basins account for 1,105 acres. Parking areas use 8 acres; rest areas, 2 acres; and landscaped areas, 65 acres. About 255 acres are privately owned. About 950 acres are owned by the City of Bakersfield. And, 195 acres are owned by other public agencies or utility companies. The width of the parkway varies, but it generally ranges from 300 to 2,200 feet, with most of it contained within the primary and secondary floodway (areas reserved for flood control and water conservation) of the Kern River.

Flood control is the main priority of the parkway because the river runs through a large metropolitan area where protection from flooding is critical. Within Bakersfield, the Kern River Parkway is a multi-use area and contains various park facilities and several trails, including a paved bike trail, a jogging trail, and an equestrian trail (see Figure 3-4, provided later in this section), the latter of which is undeveloped and designed to be similar to the trails Native Americans once used. The 24-acre Par Course Park area sits along the river.

The Kern River Parkway within the city is a community parkway that serves users within a 5-mile radius. It can be accessed by vehicles, pedestrians, and bicycles. The area includes three sand volleyball courts, a Frisbee golf course, a multi-use trail used by bicyclists, pedestrians, joggers, and skaters, the Hoey Trail, and three off-site surface parking areas (96 spaces). The undeveloped equestrian trail is on the north side of the river about 1,000 feet from the parkway. No motorized vehicles are allowed on the trails. More detail on the Kern River Parkway is provided in the *Section 4(f) Evaluation* in Appendix B, Attachment A, Volume 2.

Jastro Park

Jastro Park is about 9.24 acres and sits between Truxtun Avenue and 18th Street, just east of Oak Street at 2900 Truxtun Avenue. The park is bordered by residential homes on all sides. Jastro Park is owned by the City of Bakersfield and is administered by the Recreation and Parks Department.

Saunders Park

The 11.3-acre Saunders Park is just west of Oak Street at 3300 Palm Street. The park is bordered by a retention basin to the north, State Route 99 to the east, and residential homes to the south and west. Saunders Park is owned by the City of Bakersfield and is administered by the Recreation and Parks Department.

Saunders Park is a neighborhood park, used mostly by nearby residents. The park can be accessed by vehicles, pedestrians, and bicyclists. Park facilities include two lighted full basketball courts, one equipment building/room, one picnic shelter for families, one restroom building, a roller hockey facility, four horseshoe pits, a splash/water play area, and an undeveloped area along the northern portion of the park.

Wayside Park

Wayside Park is about 14.3 acres and sits at 1200 Ming Avenue at the corner of Ming Avenue and El Toro Drive. The park is bordered by residential homes to the north and west, the Kern County Fairgrounds to the east, and undeveloped land to the south. The park is owned by the City of Bakersfield and administered by the Recreation and Parks Department.

Yokuts Park

The 18.3-acre Yokuts Park sits just off Empire Drive, north of the Truxtun Avenue extension at 4200 Empire Drive. The park is bordered by the Kern River to the north and west, an industrial park to the south, and State Route 99 to the east. Yokuts Park is a neighborhood park, used mostly by nearby residents. Yokuts Park is owned by the City of Bakersfield and administered by the Recreation and Parks Department.

Section 6(f)(3) of the Land and Water Conservation Fund Act (16 U.S. Code §4601-4) contains provisions to protect federal investments in park and recreation properties and the quality of those assisted properties. The Land and Water Conservation Fund Act includes a clear mandate to protect grant-assisted areas from conversion:

> SEC. 6(f)(3) – No property acquired or developed with assistance under this section shall, without the approval of the Secretary, be converted to other than public outdoor recreation use. The Secretary shall approve such conversion only if he finds it to be in accord with the then existing comprehensive statewide outdoor recreation plan and only upon such conditions as he deems necessary to assure the substitution of other recreation properties of at least equal fair market value and of reasonably equivalent usefulness and location.

This "anti-conversion" requirement applies to all parks and other sites that have been the subject of Land and Water Conservation Fund grants of any type, whether for acquisition of parkland, development, or rehabilitation of facilities.

A review of the Land and Water Conservation Fund grants database indicated that the City of Bakersfield received one grant for $157,050, which was provided in the 1988/1989 time frame, and a second grant for $87,832, which was provided in the 1989/1990 time frame for the Kern River Parkway. Upon consultation with City of Bakersfield officials, it has been determined that these grants were used to develop group picnic areas, open turf areas with irrigation and landscaping, and support facilities. City of Bakersfield Resolutions 43-89 and 32-90 contain Section 6(f)(3) project boundary maps indicating the area subject to Section 6(f) anti-conversion requirements; that area is now known as Yokuts Park.

Environmental Consequences

This section presents the permanent impacts to parkland within the study area as a result of project implementation. Effects from construction activities are addressed in Section 3.6 of this environmental document. The information in this section is based on the *Section 4(f) Evaluation* (April 2014), which is provided in Appendix B provided in Volume 2.

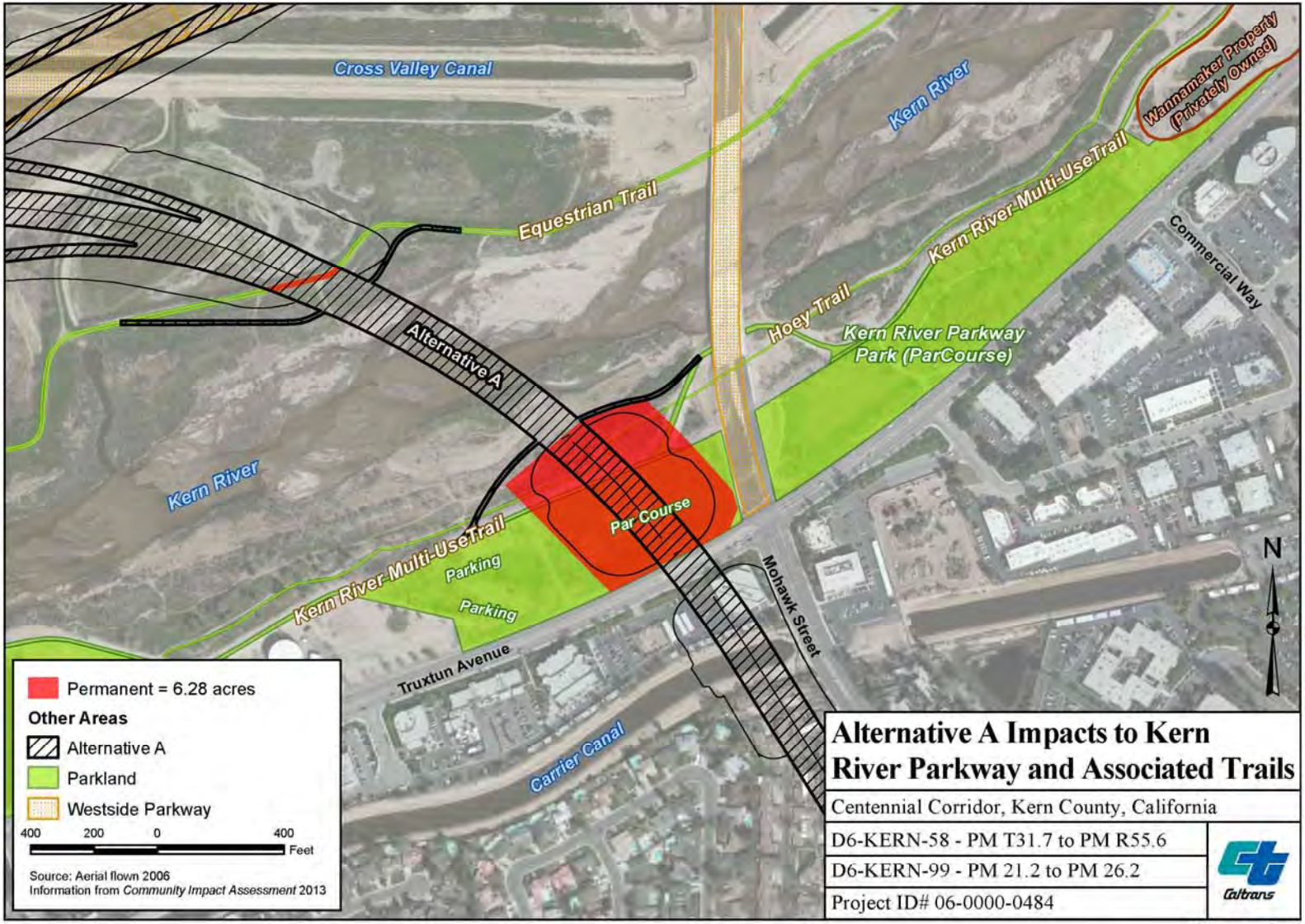
Common to All Build Alternatives

Some parkland would be needed for project construction and to provide right-of-way for the freeway. Project design has avoided impacts to parkland as much as possible. Based on the preliminary engineering design, the effects on park use from Segment 1 alternatives are summarized in Table 3.4 and graphically shown in Figures 3-4 through 3-6. No parkland or recreational impacts would occur in Segments 2 and 3 of the project. A discussion of the parks where there are no impacts is provided in Section 10.1 of the *Section 4(f) Evaluation*, in Appendix B provided in Volume 2.

Alternative A

Alternative A crosses the equestrian trail on the north side of the Kern River. Alternative A would acquire an estimated 6.28 permanent acres of the Kern River Parkway corridor (see Figure 3-4). On the south side, the land subject to permanent acquisition is in use for park purposes and would have the following impacts: removal of three sand volleyball courts, removal of most of a Frisbee golf course, realignment of the Kern River Multi-Use Trail and the Hoey Trail on the south side of the Kern River. On the north side of the Kern River, a portion of the equestrian trail would be relocated at the Kern River Parkway. Mature trees and other vegetation would also be removed within the project footprint.

Parklands are protected under Section 4(f) of the Department of Transportation Act of 1966, and a Section 4(f) evaluation has been prepared to document the disposition of the impacts (see Appendix B in Volume 2).



Alternative A Impacts to Kern River Parkway and Associated Trails

Centennial Corridor, Kern County, California

D6-KERN-58 - PM T31.7 to PM R55.6

D6-KERN-99 - PM 21.2 to PM 26.2

Project ID# 06-0000-0484

Caltrans

Figure 3-4

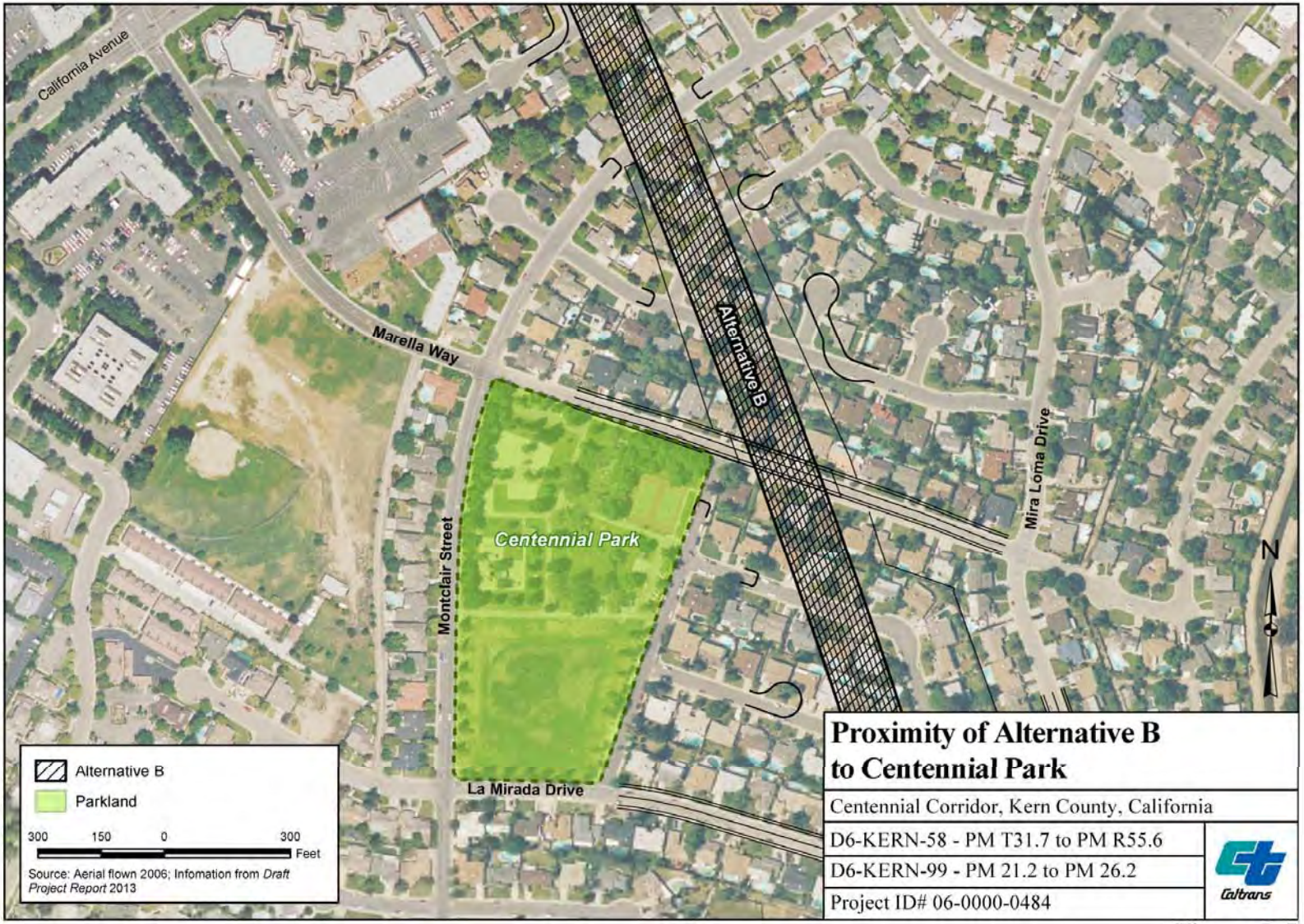
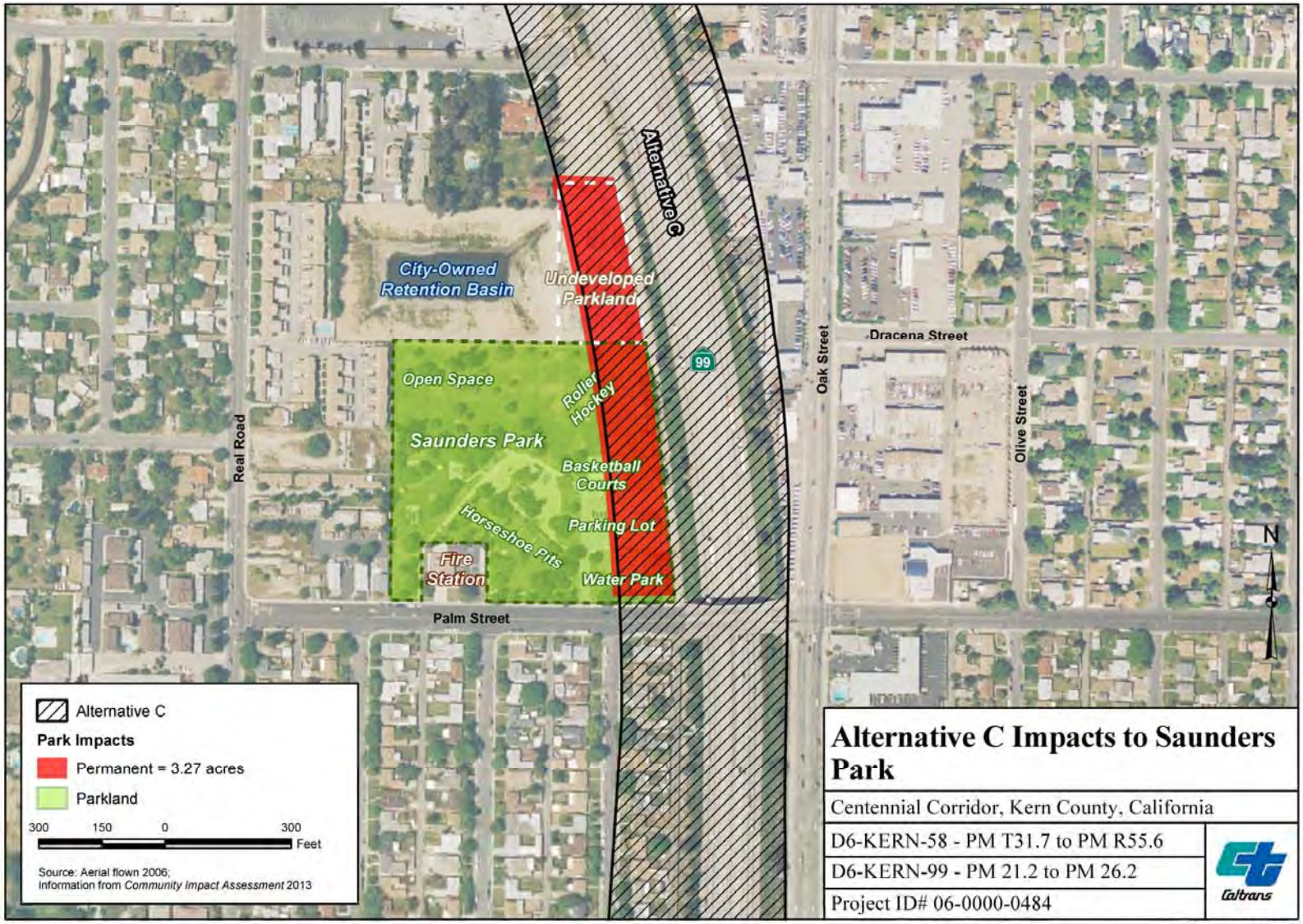

California Avenue
Marella Way
Alternative B
Mira Loma Drive
Montclair Street
Centennial Park
La Mirada Drive
N
Alternative B
Parkland
300 150 0 300
Feet
Source: Aerial flown 2006; Infomation from *Draft Project Report* 2013
Proximity of Alternative B to Centennial Park
Centennial Corridor, Kern County, California
D6-KERN-58 - PM T31.7 to PM R55.6
D6-KERN-99 - PM 21.2 to PM 26.2
Project ID# 06-0000-0484
Caltrans

Figure 3-5



Alternative C Impacts to Saunders Park

Centennial Corridor, Kern County, California

D6-KERN-58 - PM T31.7 to PM R55.6

D6-KERN-99 - PM 21.2 to PM 26.2

Project ID# 06-0000-0484

Caltrans

Figure 3-6

State and local governments often obtain grants through the Land and Water Conservation Fund Act to acquire or make improvements to parks and recreational areas. Section 6(f) of Land and Water Conservation Fund Act prohibits the conversion of property acquired or developed with these grants to a non-recreational purpose without the approval of the Department of Interior's National Park Service. A review of the Land and Water Conservation Fund grants database indicates that two grants were used for the Kern River Parkway (Yokuts Park), but outside the project footprint. Therefore, the project is not in violation of Section 6(f) of the Land and Water Conservation Fund Act.

Alternative B

With implementation of Alternative B, no permanent use of parkland would occur. Construction of Alternative B would require the acquisition of right-of-way, which would eliminate several of the east-west roadway access points to the park. However, area residents would continue to have many access options to the park via the remaining roadways (such as Marella Way and Montclair Street).

Alternative B would result in a new freeway alignment that would cross Marella Way just east of Fallbrook Street near Centennial Park. The roadway would run diagonally in a depressed cross-section. Marella Way would cross over the freeway. Because of its proximity, Alternative B would increase the noise level at the park. Figure 3-5 shows the proximity of the Alternative B alignment and Centennial Park. Noise was measured in the northeast corner of Centennial Park. The ambient noise level was 53 A-weighted decibels (dBA). Results of the hourly traffic noise level analysis show that the noise levels at Centennial Park would fluctuate between 55 and 64 dBA throughout the day, with noise level increases of 2 to 11 decibels (dB) over the pre-project conditions. The analysis also shows that the noise increase of 11 dB would only occur within three hours of any given day (see detailed discussion in Section 4.2.3). Given the noise level increase is below the impact criteria of 12 dB and the urban nature of the park (surrounded by residential housing and local arterial roadways), serenity and solitude are not key attributes of Centennial Park, implementation of Alternative B would not substantially impair the activities and features at Centennial Park. No adverse impacts are anticipated.

With Alternative B, no permanent use of parkland at the Kern River Parkway would occur because the freeway would be built within the right-of-way acquired for the Westside Parkway. In addition, bridges would span the existing trails (the Hoey Trail, equestrian trail, and the Kern River Multi-Use Trail).

Alternative C

Alternative C would permanently affect 1.95 acres of the developed portion and 1.32 acres of an undeveloped portion of Saunders Park, causing the loss of basketball courts, an enclosed roller hockey arena, a retention basin, a splash/water play area, two parking areas, and an equipment storage room (see Figure 3-6). The new elevated freeway would run alongside the eastern boundary of the park, supported on a retained structure reaching about 30 feet above grade, atop of which would be a

soundwall that is another 12 feet high. Overall, a vertical wall would define the eastern boundary of the park. Both landscaping and surface texturing would be applied to soften the appearance of the new structure. Before mitigation, the usefulness of the park would be substantially diminished.

No permanent use of parkland at the Kern River Parkway would occur because Alternative C would be built within the right-of-way acquired for the Westside Parkway. In addition, bridges would span the existing trails (Hoey Trail, equestrian trail, and the Kern River Multi-Use Trail).

No-Build Alternative

Because there would be no construction or operation of the Centennial Corridor with this alternative, no impacts to parkland would occur.

Avoidance, Minimization, and/or Mitigation Measures

Since Alternative B would not permanently affect any park or recreational facilities, no mitigation is required.

The following mitigation measure would apply if Alternative A is selected:

PR-1 Caltrans, in coordination with the City of Bakersfield, shall implement the following measures to minimize impacts to the Kern River Parkway:

- Prior to construction, reconstruct the Kern River Multi-Use Trail and equestrian trail that would be affected by construction activities. Locate the new realigned trails at underpasses beneath the overhead structures.
- Access to the pedestrian, bicycle, and equestrian trails shall be maintained to the extent practicable during the construction period. Signs shall be furnished for all paths and for any paths temporarily closed for public safety and security.
- Prior to construction, replace the volleyball courts and other park uses potentially displaced by the project construction at a new location within the Kern River Parkway, to be identified by the City of Bakersfield.
- After construction, replant native vegetation that would be cleared during construction of the project using similar plant materials approved by the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife. All mature trees will be replaced at a 1:1 ratio.

The following measure would apply if Alternative C is selected:

PR-2 Caltrans, in coordination with the City of Bakersfield, shall implement the following measures to minimize impacts to Saunders Park that would result from implementing Alternative C:

- Assemble and consolidate excess land in the vicinity of the park to redefine a new park boundary that is estimated to comprise an estimated 12.95 acres, a net increase of 1.65 acres.
- The park shall be developed consistent with the concept plan provided in Section 7.2, Measures to Minimize Harm to Saunders Park of the *Section 4(f) Evaluation* provided in Appendix B, Volume 2. All affected facilities shall be replaced. As shown in the concept layout, the new Saunders Park includes the following relocated facilities: basketball courts, roller hockey facility, splash/water play area, group picnic areas, and parking areas. Security lighting shall be incorporated.

3.1.2 Growth

Regulatory Setting

The Council on Environmental Quality regulations, which established the steps necessary to comply with the National Environmental Policy Act of 1969, require evaluation of the potential environmental effects of all proposed federal activities and programs. This provision includes a requirement to examine indirect effects that 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 CFR 1508.8, refer to these consequences as indirect impacts. Indirect impacts may include changes in land use, economic vitality, and population density, which are all elements of growth.

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

Affected Environment

This section uses information from the *Community Impact Assessment* (September 2013) and the *Traffic Study Report for the Centennial Corridor Project* (November 2012) prepared for this project.

To determine whether project-related growth is reasonably foreseeable, factors such as project type, project location, and growth pressures in the project area are analyzed. If growth is reasonably foreseeable, then further analysis is required to determine the effect of this growth on resources of concern.

Current Recent Population and Development Patterns in the Project Area

According to the Kern Council of Governments, about one in every 50 people in California now lives in Kern County. The region grew by more than 185,000 persons from 2000 to 2011. By 2011, Kern County's population reached 849,000 persons and was ranked the 11th most populated county of the state's 58 counties.

The metropolitan Bakersfield area has also seen marked population growth over the last 30 years. Between 1980 and 2010, the population has grown from 228,000 to 533,461 persons, which is an approximate annual growth of 2.8 percent.

Growth in residential developments has followed the overall pattern of population growth in metropolitan Bakersfield, and about 80 percent of new housing has been built on the west side. More dense development has occurred closer to central Bakersfield.

Housing construction in the city has been fairly effective in meeting Regional Housing Needs Assessment goals. It is the City's goal to identify and implement programs to balance employment growth with the ability to provide housing opportunities affordable to the incomes of newly created job opportunities. A variety of housing types and economic segments have been provided for through the City's housing programs. The City is providing for housing growth far beyond the current Regional Housing Needs Assessment period.

Future Growth Potential in the Project Area

By 2035, the population of metropolitan Bakersfield is expected to reach about 848,487 persons, which would be about 60 percent of the expected population for all of Kern County. As new housing stock expands to accommodate expected population growth over the next 20 to 30 years, increased demand for access between developing areas and downtown Bakersfield would also be expected. As can be seen in Figure 3-7 (provided in Volume 2), growth within metropolitan Bakersfield is expected to be most pronounced in the northwest area, west of State Route 99, in the northeast area, east of State Route 178, and in the southwest.

The pace of growth within the project area has been particularly slowed in recent years due to the ongoing weak construction market. However, as noted in Section 3.7, Cumulative Impacts, four major private development projects on the west side of Bakersfield area have been approved, but are not currently under construction, including Bakersfield Commons, Stockdale Ranch, Saco Ranch Commercial Center, and Crossroads Plaza Commercial Center. In addition, several road and highway improvement projects associated with the Thomas Roads Improvement Program and the Regional Traffic Impact Fee Program would both accommodate growth and help support employment within the metropolitan Bakersfield area in upcoming years.

The Kern County General Plan discourages scattered urban density development, especially when it is not supported with adequate infrastructure. The plan guides new development toward existing infrastructure and encourages both mixed-use and infill developments. The plan also contains policies designed to balance the need for new

residential development with the county's actual expected growth, as well as promoting a variety of housing types, the efficient use of the land, and making sufficient housing available for each socioeconomic level.

Although general plans promote guided development throughout the city of Bakersfield, the need continues for existing transportation infrastructure to be improved in conjunction with other public infrastructure developments.

Environmental Consequences

The following analysis looks at potential Centennial Corridor growth-related impacts on a broad regional scale before focusing on city-level impacts.

First-Cut Screening Analysis

The Caltrans Standard Environmental Reference provides guidance for conducting growth-related, indirect impact analyses. A first-cut screening process is used by Caltrans to determine whether a potential for growth-related impacts is an issue that needs to be evaluated in the environmental document for a particular project. According to this guidance, the need for a growth-related study is based on the extent to which travel times, or accessibility, would be changed as a result of a project. Section 3.1.6, Traffic and Transportation/Pedestrian and Bicycle Facilities, discusses the impacts on traffic circulation as a result of the proposed Segment 1 construction. Based on the first-cut screening analysis, though Segment 1 in itself would not have a noticeable impact on accessibility, as part of the larger Centennial Corridor project and as part of the extensive multi-project Thomas Roads Improvement Program, the project could affect accessibility in the region and warrants a growth-related impact analysis.

Macro-Scale Growth Inducement Analysis for the Thomas Roads Improvement Program

A macro-scale *Growth Inducement Analysis* for the Thomas Roads Improvement Program (Parsons, 2009) considered the influence of the entire program of the proposed Thomas Roads Improvement Program projects, including the Centennial Corridor. A total of 12 identified projects were included in the analysis. Most of these projects are west of the Centennial Corridor project. The construction time frames projected at the time the analysis was performed ranged from 2009 through 2017.

The analysis concluded that the Thomas Roads Improvement Program projects as a group (including the Centennial Corridor) would have the effect of moderately influencing growth pressures in the northwest and west Bakersfield metropolitan areas, and marginally influencing growth pressures in the west central and northeast areas. The Thomas Roads Improvement Program projects were not expected to substantially influence the overall amount, type, or timing of regional growth. The rate of growth has been, and will continue to be, influenced by relatively inexpensive land costs, growing labor demand, increasing demand for affordable housing, and developer activity responding to the marketplace.

Growth-Related Project Impacts (Common to All Build Alternatives)

Given the growth in Bakersfield that has occurred without the project, the Centennial Corridor is being planned to accommodate growth that has already occurred, with limited capacity to induce further growth. Future development and investment in Bakersfield are expected to occur mainly in response to underlying economic conditions, including supply and demand for housing, goods and services, and only marginally due to improved travel time and accessibility. Other factors that would influence future development along the Centennial Corridor and in the western and eastern sections of the metropolitan Bakersfield area include existing infrastructure, land prices, and physical constraints.

Although the Centennial Corridor project would predominantly accommodate previous growth that has occurred rather than induce new unplanned growth, it would change accessibility and mobility within the metropolitan Bakersfield area and, as part of the larger multi-project Thomas Roads Improvement Program, could potentially contribute to improved accessibility to and from the Los Angeles metropolitan area. By reducing traffic bottlenecks and current stop-and-go vehicular traffic, the build alternatives would facilitate the flow of traffic, leading to time savings for the traveler. The project would have the effect of providing a better connection from urbanized areas of Bakersfield near downtown to the suburban fringe and areas beyond by means of a major new multi-lane, limited access highway.

The increased accessibility created by the Centennial Corridor project may affect the location of growth because improved access to downtown could make north and northwest Bakersfield more desirable. However, on a regional scale, the rate, type, and amount of growth in the project vicinity is not expected to substantially change due to land use controls shaped by local and regional plans and policies, and a desire to approve projects that are compatible with the surrounding land uses.

Growth pressures could potentially be influenced in the western section of Bakersfield with improved access to downtown Bakersfield due to construction of any of the build alternatives. The project could facilitate growth, which has historically been occurring in the western section of Bakersfield even without the project, by reducing commute times to the downtown area. While the rate of growth has slowed in recent years, it is not expected to return mainly as a result of the project. Rather, the project would accommodate the circulation demands that have been created by past and ongoing developments in the outlying areas of west Bakersfield. This would also potentially indirectly influence development in the downtown area. Bakersfield is positioned to be the economic center of the San Joaquin Valley because of its proximity to Interstate 5 and State Route 99, the two major corridors for goods movement, as well as its location between Los Angeles and the Bay Area. The California Department of Finance projects a 25 percent increase in employment in metropolitan Bakersfield by 2035. By improving access to the downtown, new development and redevelopment of the downtown area may result.

Also, improved access throughout Bakersfield would benefit agricultural-oriented businesses that are west and east of Bakersfield, as travel time and associated costs to

and from agricultural businesses and distribution facilities in the downtown area of Bakersfield and along State Route 99 and State Route 58 would be reduced.

By reducing traffic bottlenecks and stop-and-go vehicular traffic on the existing State Route 58, the build alternatives would facilitate the flow of traffic, resulting in an overall time savings for the traveler. However, while the transportation improvements would reduce the time-cost of travel, those savings would be minimal. As discussed in Section 3.3.2, the data indicates an anticipated time savings of 8 minutes for trips between the geographic points of Bakersfield and Los Angeles. While the project would have the effect of providing a better connection from urbanized areas of Bakersfield near downtown to the suburban fringe and areas beyond by means of a major new multi-lane, limited access highway, the time savings associated with that improved accessibility is minor in terms of influencing interregional locational decisions for residences and businesses.

Apart from commercial development opportunities associated with land right next to new freeway interchanges, the Caltrans *Guidance for Preparers of Growth-related, Indirect Impact Analyses* indicates that, unless transportation projects open up new land areas that had not been previously accessible, on a regional basis, the impacts to convert land uses are generally minor. The proposed Centennial Corridor project is a transportation facility in an area that has been served by roads and highways for many decades. The build alternatives would not facilitate new development by opening up access to previously undeveloped areas. Also, the pace and amount of development in Bakersfield is projected to occur with or without the Centennial Corridor project. The absence of the Centennial Corridor has not been a major constraint to development in Bakersfield, or the immediate outlying areas.

In summary, no build alternative is expected to substantially influence the overall amount or type of regional growth or influence the redistribution of economic development and population. The pattern and rate of population and housing growth would remain consistent with the population expected in existing planning documents for the area. Growth in metropolitan Bakersfield is expected to follow the trend of the Central Valley's population growth, which is fueled by high birthrates and the in-migration of people from other parts of California. The potential for growth in the Bakersfield area is consistent with local land use plans and current trends; the project would not substantively influence growth, and no growth-related impacts are expected. Current growth trends and potential future growth are considered in local land use plans, and the project would not influence growth that is not currently planned. The project would not result in direct adverse growth-related impacts.

Indirect Impacts

Indirect or secondary growth-related impacts in the region can include additional demands for housing, employment, and goods and services associated with population increase caused by or attracted to new development.

Under the three build alternatives, no new housing units or commercial and industrial uses would be needed to support project implementation. The build alternatives

would create temporary construction jobs and would not lead to any permanent increase in the employment base within the project area; therefore, no demand for housing, goods and services, or employment would be generated by the build alternatives.

The three build alternatives would not provide new access to currently undeveloped areas in the project area. The build alternatives would build new freeway/roadway facilities along Segment 1 of the Centennial Corridor, but there would be no new on-ramps or off-ramps that would provide freeway access to undeveloped areas. Lands immediately surrounding the alignments are generally developed or approved for development. Improvements at the Stockdale Highway and State Route 43 intersection (in Segment 3) would ease operations at this intersection, but would not provide new capacity in the area because of the limited extent of the improvements.

No-Build Alternative

The No-Build Alternative would not lead to any physical improvements that may induce growth or development in the surrounding area or in Bakersfield. The existing local roadway and regional highway system would operate at its current level of efficiency, and congested conditions would remain and become worse over time. No growth-related impacts are expected.

Avoidance, Minimization, and/or Mitigation Measures

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

3.1.3 Farmland

This section addresses potential impacts to farmland and agricultural land, including land under Williamson Act contracts that would result from construction of the Centennial Corridor project.

Regulatory Setting

The National Environmental Policy Act and the Farmland Protection Policy Act (7 U.S. Code 4201–4209 and its regulations; 7 CFR Part 658) require federal agencies, such as the Federal Highway Administration (or its designee), to coordinate with the Natural Resources Conservation Service if their activities may irreversibly convert farmland (directly or indirectly) to non-agricultural 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 non-agricultural 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 discourage the early conversion of agricultural and open space lands to other uses.

Affected Environment

The Kern County Agricultural Commissioner's Office estimates that 803,769 acres were harvested in Kern County in 2010 (source: 2010 Agricultural Crop Report). The top five commodities for 2010 by value—grapes, almonds, pistachios, milk, and citrus—account for about 60 percent (more than $2.8 billion) of the total value of agricultural production in the county. Other high producers include a variety of fruits, vegetables, cotton, and livestock.

The California Department of Conservation administers the Farmland Mapping and Monitoring Program, which is the only statewide land use inventory done on a regular basis. The California Department of Conservation designates land as Prime Farmland, Unique Farmland, or Land of Statewide or Local Importance as Important Farmland. Although there is no Important Farmland within Segments 1 and 2, the California Department of Conservation has designated much of the land in Segment 3 as Prime Farmland. The land affected by the Stockdale Highway/State Route 43 intersection improvements is designated as Prime Farmland and Rural Residential Land.

Lands under the California Land Conservation Act of 1965 contract, also referred to as the Williamson Act, are restricted from conversion to other land uses; however, the regulation does allow for public improvements in a preserve, if necessary. Williamson Act contracts are for a period of 10 years and are renewed automatically each year, unless the landowner or local government files to initiate non-renewal. The Government Code requires the minimum size of the area under contract be 10 acres. In return for a Williamson Act contract, property tax assessments are stabilized. Currently, there are four parcels under Williamson Act contracts located in the southwest quadrant of the Stockdale Highway/State Route 43 intersection.

Environmental Consequences

Common to All Build Alternatives

There is no Prime Farmland in Segments 1 and 2; therefore, there would be no impacts to Prime Farmlands or to Williamson Act contract land within these two segments. The improvements at the Stockdale Highway and State Route 43 intersection in Segment 3 would have impacts on farmland.

The proposed intersection improvements at Stockdale Highway and State Route 43 would result in permanent impacts to about 4 acres of Prime Farmland and temporary construction impacts to about 4 additional acres. Because the area that would be affected by the project sits at the edge of the roadway, the remainder of the parcels would continue to be farmable tracts of land. Areas affected by the temporary construction impacts would be restored and usable when the improvements are completed. The intersection improvements would affect one parcel, located to the southwest of the intersection, under a Williamson Act contract, resulting in permanent impacts to about 0.4 acre and temporary construction impacts to about 0.5 acre. Only the impacted area would be converted and taken out of the Williamson Act contract. The unaffected portion of the parcel would remain under the contract. The removal of the 0.4 acre of land from the Williamson Act contract would not

affect the viability of the remainder of the parcel remaining under the contract. Therefore, impacts to tax savings for the landowner are not anticipated.

The total acreage of Prime Farmland in Kern County is 608,790.99 acres (source: State of California Department of Conservation Division of Land Resource Protection, Farmland Mapping & Monitoring Program [1984-2013]). The total County's Prime Farmland to be lost or affected by the project is 0.000013 percent. Based on the coordination with the U.S. Department of Agriculture the project would not result in a substantial impact on farmland.

No-Build Alternative

The No-Build Alternative would not result in any impacts to Important Farmland or lands under a Williamson Act contract.

Avoidance, Minimization, and/or Mitigation Measures

Right-of-way acquisition of the Prime Farmland and Williamson Act contract land for the intersection improvements at Stockdale Highway and State Route 43 cannot be avoided. But, due to the small size of land required, substantial impacts to farmland operations are not expected. The land owners would receive appropriate compensation allowed by laws as described in Section 3.1.4.2, Relocations and Real Property Acquisition.

Mitigation and Minimization Measure

AG-1 In conjunction with right-of-way acquisition for the improvements to the Stockdale Highway/State Route 43 intersection, Caltrans shall coordinate with the County of Kern to amend the applicable Williamson Act contract to reflect the removal of the right-of-way purchased for roadway improvements from the contract.

3.1.4 Community Impacts

Three subject areas are discussed in the Community Impacts Section, including community cohesion and character; relocation and property acquisition; and environmental justice. The section focuses on Segment 1, which includes the improvements to connect Centennial Corridor to the Westside Parkway. Impacts to Segments 2 and 3 have been previously evaluated in their respective environmental documents, and there have been no substantive changes to the general settings of the area since the environmental documents for Segments 2 and 3 were certified.

3.1.4.1 Community Character and Cohesion

Community cohesion is the degree to which residents have a "sense of belonging" to their neighborhood, a level of commitment to the community, or a strong attachment to neighbors, groups, and institutions, usually because of continued association over time. The information in this section comes from the *Community Impact Assessment* (September 2013) prepared for this project.

Regulatory Setting

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

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

Affected Environment

The study area is characterized as containing a mix of mostly suburban residential communities, many dating to the 1970s, along with a few neighborhood or pocket areas characterized by houses that date to the immediate post-World War II period or earlier, the latter most markedly as one gets closer to downtown Bakersfield. While the main land use in the Centennial Corridor study area is single-family residential housing, there are also medium-density residential (single- and multiple-family), commercial (neighborhood and regional), institutional (government and schools), and light industrial (general manufacturing) uses. As described below, the Centennial Corridor (see Figure 3-8, Study Area Neighborhoods, provided in Volume 2) can be perceived as a collection of sub-communities or neighborhoods: Quailwood–Park Stockdale, Westpark, Oleander-Sunset, Southwest Bakersfield, and Southeast Bakersfield. Some residential areas within the larger developed areas are further identified by subdivision names, as indicated below.

In 2009, as part of the community impact assessment process, to gauge local residents' sense of the Centennial Corridor project and supplement information not otherwise available, Caltrans developed and mailed a neighborhood survey to about 16,000 residents living within 1,000 feet of each of the build alternatives for Segment 1 (see Appendix A of the *Community Impact Assessment* for a copy of the survey form). About 920 survey forms were returned. The survey included questions relating to one's perceived quality of life, length of time in the residential unit, and whether the unit was owned or rented. Everyone received an identical survey questionnaire, which was coded so project planners could analyze responses based on the neighborhood geographical area of those who responded. This was done so that data would be gathered in a consistent way from each of the neighborhoods that might be directly affected by the project. Survey forms were available in English and Spanish. Information gathered from those surveys is included in the following discussions.

Community Characteristics

Quailwood – Park Stockdale

The Quailwood and Park Stockdale neighborhoods have been combined because they have similar characteristics and were both master-planned by the Tenneco Company. While a small amount of the housing in the area dates to the 1940s, most of the housing stock was built from the 1960s to the 1980s. Quailwood–Park Stockdale is bound roughly by Ming Avenue to the south, California Avenue to the east, the Kern River to the north, and Coffee Road/Gosford Road to the west.

Respondents to the survey form mailed to residents living in the project study area referred to as Park Stockdale and Quailwood most commonly stated their preference for choosing to live in this section of Bakersfield because of its centrality to nearby amenities, including the Kern River Parkway and bike paths, nearby shopping centers, and restaurants, as well as schools and churches. Most of the area residents responding felt the neighborhood was safe and secure (some were pleased with being able to reside in an upscale, gated community), and many noted the neighborhood's overall cleanliness and quiet. Many of those who completed the survey form were members of a local homeowner's or condominium association. Some expressed that in recent years change had come to the neighborhood primarily in the form of younger families moving in. The one common complaint among many of those responding was the worsening local traffic conditions. Of those who did express an opinion on a project alternative for the Centennial Corridor, there was little support for Alternatives A and B.

Westpark

Westpark is west of State Route 99, north of Stockdale Highway, and south and east of California Avenue, which bends through the project area. While the oldest homes in this area date back to the late 1940s and 1950s, the Westpark neighborhood was mostly developed as part of tract development from the late 1960s through the 1970s.

As part of its master plan development, the Stockdale Development Corporation deeded 9 acres in the heart of the future Westpark neighborhood to the City to establish a park. Centennial Park includes tennis and basketball courts, picnic tables, a pavilion, and a dog park. Harris Elementary School sits along the northeast boundary of the neighborhood, and most neighborhood children walk to school. Centennial Park and Harris Elementary School are considered focal points for neighborhood activity based on one-on-one interviews conducted with neighborhood residents in 2009. The neighborhood has an active homeowner's organization. Westpark is somewhat unique among Bakersfield neighborhoods in that many essential community services are within walking distance of most houses.

The survey respondents residing in the Westpark community cited proximity to schools, churches, parks, retail, and the downtown area as features that attracted them to the neighborhood. A large community of elderly and retired people has owned homes for more than 20 years, and there are many older, well-made homes. Westpark has a Neighborhood Watch Group. Most respondents described the neighborhood as safe and clean, offering them and their families and neighbors a good quality of life.

Most survey respondents noted opposition to the project, with the most negative comments expressed about building Alternative B. Several comments conveyed preference for the alternative that follows the existing freeway alignment as much as possible (Alternative C) or for Alternative A, because these alternatives would cause the least disruption to their neighborhood. Many respondents noted preference for an elevated or depressed highway, rather than an at-grade facility, with incorporation of attractive landscaping and soundwalls. Common concerns about the project included that it would disrupt the neighborhood with increased noise and air quality impacts, as well as increased opportunity for graffiti. Other repeated concerns were that the project would decrease property values in the neighborhood and displace residents and businesses. Many respondents noted concern about displacing the retired and elderly residents for whom the impact would be greater because they have lived in the area so long and have limited resources to handle being displaced and finding replacement housing, especially in an area with so many local services. Provision of crosswalks near parks and other locations were repeatedly listed as potential issues the project could address.

During one-on-one interviews, many Westpark respondents expressed that they take advantage of the proximity to nearby community amenities and neighborhood-based small businesses, allowing them to walk or drive a very short distance to local restaurants, houses of worship, grocery markets, and retail centers. Recreational walking, including people walking dogs, is also common in the neighborhood. When citing attributes of their neighborhood, residents of Westpark often mentioned the affordability of houses, a sense of safety and stability, neighborhood walkability, and access and convenience to other parts of the city. The general feel of the area—with its large trees and sense of community—is identified as a quality that distinguishes their neighborhood from others in Bakersfield.

Oleander-Sunset

The Oleander-Sunset neighborhood is generally considered to be bound by California Avenue to the north, Oak Street to the west, Brundage Lane to the south, and Union Avenue to the east. The main streets in the neighborhood are Union and Chester Avenues, H Street, Palm Street, Fourth Street, and Brundage Lane.

The Oleander-Sunset Park Association, formed in 1992, is considered Bakersfield's first homeowners association. A renewed community spirit revolved around the growing understanding and appreciation of the neighborhood's rich history, including residences that date back to the late 19th and early 20th centuries. The Sunset Park subsection of the community is generally located in the northwest corner of the larger Oleander-Sunset neighborhood; its first houses were built in the mid-1920s.

The housing stock of the neighborhood is broken down as 82 percent being single-family units and 18 percent being multi-family units. Residents of the Oleander-Sunset neighborhood benefit from the neighborhood's centralized location, shopping and dining opportunities, and easy access to other local amenities. Some of the nearby recreational areas include Saunders Park, Lowell Park, Wayside Park, and Beal Park. The southwest corner of this Oleander-Sunset neighborhood, which is directly

affected by the project (Alternative C) encompassing Olive and Cypress Streets among others, can be characterized by the presence of single-family tract houses built in 1950. A large number of the commercial land uses located along the neighborhood's border on Brundage Lane, east of Oak Street, are related to automotive care (tire sales, engine repair, and brake service).

The Oleander-Sunset community survey respondents overall expressed sentiments that their neighborhoods offer a safe, desirable place within an older section of Bakersfield, with well-preserved, unique homes and older trees. Most respondents cited the neighborhood as offering an excellent or good quality of life. The community has many historic houses and provides multiple parks and good access to nearby downtown. Some respondents commented that visitors come to this neighborhood because of its historic character and for neighborhood-sponsored community events such as the July 4th parade and Christmas carriage tours.

Several survey respondents noted that younger families are moving into the Oleander-Sunset neighborhood, and they felt there is increased pedestrian and bicycle traffic, especially near parks and schools. Traffic congestion and cut-through traffic were repeatedly cited as existing problems, at the California Avenue/Oak Street intersection in particular.

Many of those responding to the survey also expressed concerns over aesthetics, with repeated interest for a depressed freeway with landscaping or a landscaped buffer. There were mixed comments about the provision of construction of soundwalls, with some aesthetic concerns about the walls and highway and some comments calling for walls that could be painted. Providing noise walls to address existing sound from State Route 99 and addressing traffic congestion on local streets were listed multiple times as potential issues the project could address. A couple of respondents noted that speeding automobile traffic in areas with high pedestrian traffic is an existing problem. Oak Street, California Avenue, and Truxtun Avenue were repeatedly mentioned as locations to provide or maintain cross-through traffic opportunities with the project. Several respondents showed support for a freeway connection west from State Route 99, urging the use and expansion of existing roadways as a priority in selecting an alternative.

Southwest Bakersfield

Southwest Bakersfield is the most populated section of the Bakersfield metropolitan area. Development in this neighborhood was influenced by the construction of California State University, Bakersfield in the 1970s. Areas farther east, in the northeast section of the Southwest Bakersfield area shown in Figure 3-8 (provided in Volume 2), near Belle Terrace and Real Road, south of Stockdale Highway, are also residential in nature and mostly encompass post-World War II suburban tract housing dating from the early to mid-1950s. Many houses in this area sit on smaller parcels compared to the more recent houses west of New Stine Road. Because they have been there longer, the residential streets typically have more mature trees and landscaping; there is also a higher concentration of multi-family residential units in this section

than in other neighborhoods in the study area. Various commercial services are provided by businesses on nearby Stockdale Highway.

Many survey respondents from this sub-community expressed opposition to the project because they felt it would disrupt or destroy the neighborhood and devalue property. Multiple respondents commented that being offered fair market value for their homes would not justly compensate them due to the current low market conditions, and they would be financially damaged if their house was to be acquired to accommodate the project. Hardship for elderly residents who would be displaced was a repeated concern by respondees. Several expressed preference for Alternative C because they felt it would cause the least disruption to neighborhoods as well as the least number of displacements, and they expressed opposition to Alternative B because they felt it would cause the most disruption. Many respondents also expressed support for the project. Several respondents expressed interest in a depressed highway with landscaping and noise walls. Increased opportunity for graffiti was another repeated concern about the project. Addressing traffic congestion on arterial streets was commonly noted as a problem the project could address.

Southeast Bakersfield

The southeast side of Bakersfield, the northern border of which touches the project area of all build alternatives, is a redevelopment area that generally extends from H Street east to Washington Street and from the State Route 58 corridor north to the California Avenue corridor. In interviews done in 2009, respondents of this section stated they believed the City's redevelopment efforts helped to stimulate the area and bring new businesses that catered to the local residents; this helped bring residents back to the neighborhood. Several residents stated it was fairly easy to get around this section of Bakersfield and one could comfortably walk to nearby places such as grocery stores, other retail stores, and local parks. The neighborhood provides affordable housing according to many of the residents who responded to the survey. Some of the commercial businesses within the area are described by its residents as small businesses and minority owned. Most of the areas right next to existing State Route 58 are industrial or commercial in nature; residential areas are generally south of the Brundage Lane corridor and State Route 58.

Most survey respondents from Southeast Bakersfield rated the neighborhood quality of life as good or fair, but several respondents rated it as poor. Many respondents also commented on the good freeway access (State Route 99 and State Route 58) offered by the neighborhood. At the same time, many respondents commented on noise from these highways as an existing problem and requested soundwalls. Provision of noise walls to address existing sound from State Route 99 and State Route 58, addressing speeding traffic on local streets, improving street lighting, and sidewalks and street pavement conditions were listed many times as potential issues the Centennial Corridor project could address. Multiple respondents commented that in looking at the map the project does not appear to affect their neighborhood. Many respondents expressed general support for the project and complained about congestion on State Route 58 (West) (Rosedale Highway). Soundwalls, landscaping with trees, speed bumps, and stop signs as traffic-calming measures were listed as potential project

features to help make the project more compatible with the neighborhood. Several respondents expressed interest in an elevated highway being built.

Community Cohesion

Community cohesion stems from the social interaction among members of a community or neighborhood. Indicators of higher community cohesion generally include the following:

- Long average residency tenures
- Households of two or more people
- Social factors such as higher proportions of homeownership versus rentals, and single-family homes versus higher-density housing
- Ethnic homogeneity
- Substantial community activity
- Higher proportion of seniors
- Facilities for pedestrians and the disabled
- Community facilities

Based on information collected by Caltrans, including through feedback in interviews and public meetings, returned survey forms, and field surveys, the Centennial Corridor project area can be thought of as generally containing several moderately cohesive neighborhoods. For example, residents of all the neighborhood districts potentially affected by one or more of the build alternatives are likely to have neighborly exchanges on the street and see each other occasionally at nearby grocery stores or local restaurants, as well as during school functions and while attending services at local places of worship, to name a few instances. When members of gated communities get to know their neighbors as they participate in group activities, or residents of older neighborhoods feel common bonds for protecting the historic character of their neighborhood and involve themselves in Neighborhood Watch programs, they exhibit certain characteristics of people residing in cohesive communities. Therefore, it might be best to view the concept of community cohesion as being on an ongoing condition and not an either/or characteristic.

Westpark neighborhood residents appear to exhibit a strong sense of community cohesiveness. Shopping, local restaurants, the nearby bookstore, preschool and elementary schools, places of worship, and non-emergency and outpatient medical care facilities are all within walking distance of Westpark, and many residents report they frequently walk rather than drive to nearby destinations. Availability of facilities in a walking distance allows face-to-face contact and contributes to a cohesive community, compared to master planned developments in Southwest Bakersfield and Quailwood-Park Stockdale, for example, which would require a car for most people

to get around to local businesses and amenities. Centennial Park and Harris Elementary School are anchors in the Westpark community, serving to further bind the residents as a cohesive group, but certainly the residents living near many of the parks would likely experience much of the same sense of cohesiveness.

A factor that would distinguish Westpark from other nearby sub-community sections is that many of its residents have been involved in the Centennial Corridor project over the course of many years, and they have shown a strong commitment to staying involved. When public meetings for the project were held, a great many of those attending came from Westpark. The neighborhood's interest in the project is reflected in part by the degree of participation in voluntary one-on-one interviews and survey return rates. Although residents of all potentially affected neighborhoods were encouraged to participate in the one-on-one interviews, most of the interviewees were residents of Westpark. Likewise, no neighborhood matched Westpark for returning the general survey forms. These numbers, and the consistency of the individual responses to interview/survey questions, are further evidence of the strong community cohesion within the Westpark neighborhood.

In addition, a sizable percentage of the surveys returned to Caltrans in 2009 noted that many Westpark residents have adopted an informal system to provide their neighbors assistance in times of need, much more than was shown in survey forms returned from the other nearby communities.

Measuring the quality of life within a neighborhood is an important aspect in determining the satisfaction of individuals with their community or neighborhood. What one defines as quality of life is subjective. Many factors may contribute to an individual's image of a community – for example, the opportunity for forming friendships, the attachment of residents to their particular neighborhood, a positive sense of the nearby physical and cultural environment. Table 3.5 demonstrates how survey responders to the Caltrans 2009 questionnaire perceive the quality of life within their particular sub-community or neighborhood.

Table 3.5 Quality of Life within Centennial Corridor Communities

Neighborhood	Quality of Life (Percentage)					
	Excellent	Good	Fair	Poor	Unknown	No Answer
Westpark	49.7	40.5	7.0	1.9	0.0	0.9
Quailwood-Park Stockdale	37.5	52.5	5.0	2.5	0.0	2.5
Southwest Bakersfield	19.4	56.4	21.0	2.7	0.0	0.5
Southeast Bakersfield	4.0	44.5	33.7	15.8	2.0	0.0
Oleander-Sunset	19.4	55.4	18.3	4.8	0.5	1.6

Source: Developed from the *Community Impact Assessment* 2013.

As shown in Table 3.5, about 90 percent of the residents of Westpark and Quailwood-Park Stockdale rated their quality of life as being either good or excellent, while other sections of Bakersfield collectively rated their quality of life as merely good or fair.

This closely parallels the comments that were formally received during public meetings, information obtained from the one-on-one interviews, and the handwritten comments expressed on the neighborhood surveys returned to Caltrans.

In summary, while factors used to measure community cohesion tend to be somewhat subjective and difficult to quantify, Westpark, as a whole, exhibits many of the classic characteristics perceived to be associated with a cohesive community.

Socioeconomic Characteristics

In addition to feedback from residents about their neighborhoods, socioeconomic and demographic data for the census tracts and block groups for each alternative, as shown in Figures 3-9a through 3-9c (provided in Volume 2), were used for reference and analysis in this section and are based on the 2010 U.S. Census. Also included in the analysis is a larger region of analysis, specifically the city of Bakersfield and Kern County.

Table 3.6 shows the racial composition of the population by alternative compared to the larger region. The information is summarized below:

- Alternative A passes through 17 census block groups with a total population reported at 13,921, of which about 43 percent are white and about 57 percent are considered minority (non-white).

- Alternative B passes through 16 census block groups with a total population reported at 12,460, of which about 44 percent are white and about 56 percent are considered minority (non-white).

- Alternative C passes through 15 census block groups with a total population of 11,689, of which about 42 percent are white and about 58 percent are considered minority (non-white).

Table 3.7 presents the data on household income according to the 2010 U.S. Census. The information is summarized below:

- Alternative A is contained within 11 census tracts with an average household size of about 2.9 persons and an average median household income of $44,620.

- Alternative B is contained within 11 census tracts with an average household size of about 2.9 persons and an average median household income of $44,620.

- Alternative C is contained within 12 different census tracts with an average household size of about 2.8 persons and an average median household income of $45,112.

Table 3.6 Race and Ethnic Composition of the Population in the Project Area

Geographic Area	Total Population	White	African-American	American Indian/ Alaska Native	Asian	Native Hawaiian/ Other Pacific Islander	Other Race/Two or more races	Total Minority Population	Hispanic or Latino of Any Race
Kern County	839,631	323,794	45,377	5,893	33,100	995	17,439	515,837	413,033
		39%	5%	1%	4%	<1%	2%	61%	49%
City of Bakersfield	347,483	131,311	26,677	2,265	20496	357	8,172	216,172	158,205
		38%	8%	1%	6%	<1%	2%	62%	46%
Alternative A	23,868	10,304	2,126	191	854	18	569	13,564	9,806
		43%	9%	1%	4%	0%	2%	57%	41%
Alternative B	22,446	9,882	1,853	178	828	17	534	12,564	9,341
		44%	8%	1%	4%	0%	2%	56%	41%
Alternative C	18,815	7,971	1,562	158	708	15	443	10,844	7,958
		42%	8%	1%	4%	0%	2%	58%	42%

Note: Percentage number is rounded to the nearest one.
Source: Developed from the *Community Impact Assessment* 2013.

Table 3.7 2010 Median Income Data for Affected Census Tracts

Geographic Area	Total Occupied Households	Average Persons per Household	Median Household Income (dollars)	2010 Poverty Guideline[a]
Alternative A and B				
Census Tract 5.07	1,283	2.9	$78,188	$18,310
Census Tract 18.01	2,040	3.0	$46,107	$18,310
Census Tract 18.02	2,134	2.5	$64,839	$18,310
Census Tract 19.01	1,318	2.8	$41,500	$18,310
Census Tract 19.02	1,825	2.8	$38,018	$18,310
Census Tract 20.00	2,205	3.3	$20,513	$22,050
Census Tract 26.00	931	3.5	$33,092	$22,050
Census Tract 27.00	1,721	3.4	$47,668	$22,050
Census Tract 28.12	2,065	2.4	$27,955	$18,310
Census Tract 28.13	1,652	2.7	$31,604	$18,310
Census Tract 38.12	1,633	2.7	$61,339	$18,310
Total or Average	18,807	2.9	$44,620	-
Alternative C				
Census Tract 5.07	1,283	2.9	$78,188	$18,310
Census Tract 17.00	1,907	2.0	$50,525	$14,570
Census Tract 18.01	2,040	3.0	$46,107	$18,310
Census Tract 18.02	2,134	2.5	$64,839	$18,310
Census Tract 19.01	1,318	2.8	$41,500	$18,310
Census Tract 19.02	1,825	2.8	$38,018	$18,310
Census Tract 20.00	2,205	3.3	$20,513	$22,050
Census Tract 26.00	931	3.5	$33,092	$22,050
Census Tract 27.00	1,721	3.4	$47,668	$22,050
Census Tract 28.12	2,065	2.4	$27,955	$18,310
Census Tract 28.13	1,652	2.7	$31,604	$18,310
Census Tract 38.12	1,633	2.7	$61,339	$18,310
Total or Average	20,714	2.8	$45,112	-
City of Bakersfield	111,132	3.1	$53,997	$18,310
Kern County	254,610	3.2	$47,089	$18,310

a The federal poverty line or level is issued each year by the Department of Health and Human Services and is used for determining financial eligibility for certain federal programs, including Medicare, Family Planning Services, and the Community Food and Nutrition Program, among others. They are a simplified version of the Census Bureau's poverty thresholds and the same for the 48 contiguous states. Neither the Census Bureau nor the Department of Health and Human Services (HHS) tabulates the number of people below the HHS poverty guidelines. The best approximation for the number of people below the HHS poverty guidelines in a specific area would be the number of persons below the Census Bureau poverty thresholds in that area. Information from the Department of HHS, Office of the Assistant Secretary for Planning and Evaluation. Accessed at: www.aspe.hhs.gov/poverty on February 10, 2012.

Source: Developed from the *Community Impact Assessment* 2013 (U.S. Census, 2010, ACS 5-Year Estimate 2006-2010, DP-03, S1101, DP04).

Although the average median household incomes within each alternative study area are less than the city of Bakersfield and Kern County as a whole, they are above the federal poverty guideline, except for Census Tract 20.00. The poverty line, determined by the Department of Health and Human Services on a yearly basis, is defined as a minimum income level below which a person is officially considered to lack adequate subsistence and to be living in poverty. Households below this line are considered "low-income." The poverty guideline (also known as the "poverty line") in 2010 for a household of 3 and 4 persons was $18,310 and $22,050, respectively.

Housing Demographics

Based on 2010 U.S. Census housing characteristics data, the project area covering the build alternatives contained about 9,372 housing units for Alternatives A, 8,747 housing units for Alternative B, and 7,232 housing units for Alternative C. Most of the housing units in each build alternative study area were occupied at a percentage similar to the city of Bakersfield (about 92 percent), but slightly higher than the County of Kern (about 89 percent).

The area with the highest percentage of occupied housing units belonged to Tract 18.02, Block Group 1 (96 percent). The area with the lowest percentage of occupied units was in Tract 19.02, Block Group 3 (86 percent). The high percentage of occupied units along the project corridor is likely due to a combination of factors including, but not limited to, price, incidence of foreclosures, and tenure of residents.

Environmental Consequences

Construction of any of the build alternatives would place a new freeway in existing neighborhoods, causing numerous residential and business displacements, neighborhood disruption, and environmental resource impacts such as localized air quality, noise, and visual effects as discussed below.

Alternative A

This alignment would pass through the northern portion of the Quailwood-Park Stockdale and also the northern portion of neighborhoods in the Southwest section of Bakersfield. A total of 356 residential units and 127 commercial, industrial, and manufacturing businesses would be displaced. Residential areas that would experience the greatest number of displacements include the condominiums on Mohawk Street and Lennox Avenue; several apartment houses on Williamson Way; and single-family residences on Brite Street, Frazier Avenue, Laverne Avenue, Curran Street, Jones Street, and Griffiths Street, among others. Many single-family residences on these streets are considered eligible for the National Register of Historic Places as part of the Rancho Vista Historic District. Displacement of these houses would result in a substantial change in the character of this small section of Bakersfield.

Many business properties that would be required for Alternative A are concentrated along California Avenue and Stockdale Highway. Detailed information on property acquisitions is provided in Section 3.1.4.2, Relocation and Property Acquisition.

As part of the new freeway construction, changes to several local residential streets would be required. Any proposed roadway closures or redesign, such as an overpass or underpass of the freeway, would change the circulation patterns and access of the local residents. For example, residents living south of Stockdale Highway and west of Real Road may perceive that they would be somewhat "boxed in" by the presence of the new freeway. Although project design would minimize changes in the circulation pattern as much as possible, seven local street closures (refer to Appendix E in Volume 2) would inconvenience and diminish the sense of safety for some pedestrians and bicyclists and would reduce direct automobile connectivity to the larger streets in the affected neighborhoods. Changes that would restrict pedestrian and bicycle travel would result in a negative effect on community cohesion.

Residents living close to the new freeway would experience a greater exposure to trucks and automobile noise. A *Noise Study Report* (January 2013) for the project identified 235 affected receivers representing 532 frequent outdoor use areas where the noise level would be elevated as a result of freeway traffic. A total of 19 soundwalls were recommended feasible and reasonable, which would abate 203 of these affected receivers, which represent 464 frequent outdoor use areas. Detailed information on noise effects of the project can be found in Section 3.2.7, Noise and Section 4.2.3, Unavoidable Significant Environmental Effects – Noise.

The Air Quality Analysis determined that predicted concentrations of carbon monoxide are estimated to be less than 50 percent of the applicable standards. The project would not contribute to a violation of standards, and project-level carbon monoxide conformity would be satisfied.

A qualitative particulate matter conformity analysis was done to predict the level of local impacts from particulate matter (PM_{10} and $PM_{2.5}$) as a result of traffic operations. The results show that the project would not cause a new or contribute to a violation of particulate matter standards with the implementation of the project.

A quantitative hot-spot analysis of local emissions of mobile source air toxics was done. A significant decrease in mobile source air toxics emissions was calculated for the project alternatives when comparing 2018 and 2038 emissions to the base year (2008) levels. This is directly due to the improved pollution emission performance of a modernizing fleet of all vehicles, especially heavy diesel trucks, due to federal and state fuel content and engine emissions rules. More detailed information on air quality analysis can be found in Section 3.2.6, Air Quality and Section 4.2.2, Significant Environmental Effects of the Project – Air Quality.

With the new freeway built in the neighborhood, residents would experience some visual changes from the existing condition. A *Visual Impact Assessment* (March 2013) assessed impacts to visual and aesthetics at various key viewpoints along each build alternative and found that long-term visual impacts on key viewpoints as a result of construction of Alternative A would range from moderately low to moderately high. Presence of the elevated structure and soundwalls would, for some, result in obstructed views that would adversely affect the visual character of the

suburban neighborhoods. The new freeway that would run through the neighborhoods west of State Route 99 would change the visual character of the area. East of the State Route 58/State Route 99 interchange, the alignment for all three build alternatives would follow existing State Route 58 east to Cottonwood Avenue. Most of the proposed project design in this segment is within the existing right-of-way, in a landscape that is already characterized by flat topography, transportation facility infrastructure, light industrial, commercial, and residential properties next to the freeway, which would not largely change under any of the build alternatives. Detailed information on visual impact analysis can be found in Section 3.1.7, Visual/Aesthetics.

In summary, adverse effects to the overall character of the small portion of the project area in Southwest Bakersfield and Quailwood-Park Stockdale neighborhoods are expected as a result of construction of Alternative A. In these areas, the residential tract neighborhood scale would be lost with the addition of a new freeway.

Alternative B

Implementation of Alternative B mirrors some of the impacts affecting neighborhoods discussed for Alternative A. The distinction between Alternatives A and B is the location of the alignment in the western portion of the project area where it crosses the Kern River and where it would bisect the industrial and commercial areas on the east side of the river. Alternative B, generally northeast of the Alternative A alignment, would bisect the existing Westpark suburban neighborhood from California Street and Easton Drive in a diagonal fashion from northwest to southeast through to the intersection of Stockdale Highway and the Stine Canal overcrossing.

A segment of the Alternative B alignment would run just northeast of Centennial Park. This alignment avoids direct impacts to the Stockdale Christian School, First Assembly of God Church, and Assembly Manor Retirement Home on California Avenue. Alternative B would be built below grade through much of the Westpark neighborhood. In addition, access across the freeway would be maintained at several key spots (California Street, Stockdale Highway, La Mirada Drive, and Marella Way) to help circulation from neighborhood sections that would otherwise be cut off. The option of removing the La Mirada Drive overcrossing from Alternative B is also being considered. Removal of the overcrossing would not substantially change access, which would be provided by the Marella Way overcrossing. Removal of the La Mirada Drive overcrossing would eliminate the need to displace 13 single-family homes on La Mirada Drive near Centennial Park and save about $2.5 million in construction costs. The option for adding a Ford Road undercrossing would maintain connection of Ford Road between Stine Road and McDonald Way. The undercrossing would not require the acquisition of any additional property and would add about $5.5 million in construction cost.

As part of the new freeway construction, changes to several local residential streets would be required. Any proposed roadway closures or redesign, such as an overpass or underpass of the freeway, would change the circulation patterns and access of the local residents. Although project design would minimize changes in the circulation pattern as much as possible, closing 12 local streets (refer to Appendix E in

Volume 2) would inconvenience and diminish the sense of safety for some pedestrians and bicyclists and would reduce direct automobile connectivity to the larger streets in the affected neighborhoods. Changes that would restrict, though not completely curtail, pedestrian and bicycle travel would result in a negative effect on community cohesion in the Westpark section of Bakersfield.

Alternative B would result in more residential relocations in the Westpark neighborhood and fewer residential relocations in the Southwest Bakersfield neighborhood. A total of 310 residential units and 121 commercial, industrial, and manufacturing businesses would be displaced. The most single-family residential displacements would occur on Dunlap Street, Morrison Street, Del Rey Court, Montclair Street, La Mirada Drive, Kentfield Drive, Marella Way, Kensington Avenue, Brite Street, and Garnsey Street. Most business-related properties required for implementation of the project are on California Avenue, Stockdale Highway, and Real Road.

Residents living close to the new freeway would experience greater exposure to truck and automobile noise. A *Noise Study Report* (January 2013) for the project identified 230 affected receivers representing 482 frequent outdoor use areas where the noise level would be elevated as a result of freeway traffic. A total of 24 soundwalls was recommended feasible and reasonable, which would abate 193 of these affected receivers, which represent 411 frequent outdoor use areas. Detailed information on noise effects of the project can be found in Section 3.2.7, Noise.

With Alternative B, air quality impacts would occur to residents living closer to the freeway in a way similar to that of Alternative A above.

A *Visual Impact Assessment* (March 2013) done for the project found that Alternative B would result in moderately low to moderately high visual impacts for residents in Westpark and a portion of the Southwest Bakersfield area through which the Alternative would pass, resulting in adverse effects to the character of both neighborhoods. The freeway that runs through the neighborhood would change the visual character of the area. Detailed information on visual impacts can be found in Section 3.1.7, Visual/Aesthetics.

Due to the large number of community residents that would be displaced, the Westpark community would undergo substantial change. In addition, by changing through access on certain streets, creating cul-de-sacs, and changing internal circulation, the project would change access within the neighborhood. As discussed in Section 3.1.1.3, Parks and Recreation, Alternative B would eliminate several east-west roadways that provide access to Centennial Park, which is a key feature in the Westpark neighborhood. However, area residents would continue to have access to the park via the remaining roadways (such as Marella Way and Montclair Street).

The character of this relatively quiet suburban development, which has existed since the early 1970s as an integrated community system, would be further changed by the addition of substantial visual and noise impacts, as detailed in Sections 3.1.7

Visual/Aesthetics and Section 3.2.7, Noise. Impacts experienced at the neighborhood level would change the quality of life of many of the residents who live next to the new freeway. Also, bisecting Westpark, a community that appears to be cohesive, as discussed in Section 3.1.1.5, Community Character and Cohesion, could hinder the continued connectiveness of that area. Access within the neighborhood, characterized presently by the ability to travel by means of a variety of modes, including walking and bicycling, would be altered despite efforts by design engineers to minimize the disruption to established and familiar local circulation routes and convenient travel routes. Construction of a freeway would create physical barriers in Westpark where none existed before.

Alternative C

The Alternative C alignment differs from the alignments of Alternatives A and B by avoiding the bisection and separation of residents in the Westpark and Southwest Bakersfield neighborhoods. Of the three alternatives, Alternative C would require the most business acquisitions, but would have the fewest effects on residential units. A total of 133 residential units and 198 commercial, industrial, and manufacturing businesses would be displaced. Residential areas that would experience the most displacements would be the condominiums on Brite Street and single-family residences on Oakdale Drive, Wetherley Drive, Roosevelt Street, La Verne Avenue, Chester Avenue, Terry Street, and Haybert Court. Most business properties that would be acquired for this alternative are on Commerce Drive, Easton Drive, Oak Street, Real Road, and Brundage Lane.

As the new freeway would be aligned next to the existing railroad tracks and existing State Route 99 freeway, it would not bisect business parks or divide residential neighborhoods; therefore, implementation of Alternative C would not create a sense of separation of neighborhood areas on the east and west sides of State Route 99. The existing railroad tracks and the State Route 99 freeway already act as a barrier and discourage interaction between neighborhoods on opposite sides. Very little pedestrian activity appears to occur between these locations because of heavy, fast-moving traffic. The one exception is the Palm Street overcrossing over State Route 99 from Oak Street, which links the Oleander-Sunset neighborhood to Saunders Park. Rows of houses south of Saunders Park and next to State Route 99, specifically along Oakdale Drive and Wetherley Drive (between Palm Avenue and Verde Street), would be removed by this alternative; however, most of the existing residential tract developments would remain intact. The Alternative C alignment would be less likely to negatively affect community cohesion compared to the other two alignment alternatives; therefore, the overall effects of Alternative C on cohesiveness may be less severe than would be the case with implementation of Alternative A or B.

Residents close to the new freeway would experience a greater exposure to trucks and automobile noise. A *Noise Study Report* (January 2013) for the project identified 189 affected receivers representing 401 frequent outdoor use areas where the noise level would be elevated as a result of freeway traffic. A total of 17 soundwalls was recommended feasible and reasonable, which would abate 149 of these affected

receivers, which represent 326 frequent outdoor use areas. Detailed information on noise effects of the project can be found in Section 3.2.7, Noise.

With Alternative C, air quality impacts would occur to residents living closer to the freeway in the similar way as that described under Alternatives A and B above.

Residents next to the affected homes could experience adverse community impacts. The residences in the impact area are on higher ground than the existing State Route 99, which was built below grade, but residences that would continue to be in the neighborhood would be at a lower elevation than the new freeway. Those living in the remaining housing units would see the freeway structure carrying State Route 58 traffic and hear the increased truck and automobile noise. According to the *Visual Impact Assessment* (March 2013), Alternative C would result in average to moderately high visual impacts for the remaining residents at the western edge of the Westpark and Saunders Park areas.

Houses that would remain with implementation of Alternative C along Wetherley Drive would then be right next to a freeway and have views of soundwalls along the freeway right-of-way. Noise impacts would be abated with construction of soundwalls. The soundwalls could block views and adversely affect the visual character of the neighborhoods.

In summary, Alternative C would result in the most business acquisitions but would have the fewest effects on residential units. However, residents living closest to the new freeway would experience greater exposure to truck and automobile noise. In addition, residents next to the affected homes could experience adverse community impacts such as being located next to a freeway and views of soundwalls.

No-Build Alternative

No impacts would result from implementation of the No-Build Alternative because there would be no construction of the project.

Avoidance, Minimization, and/or Mitigation Measures

Project design would minimize impacts to the neighborhoods as much as feasible and practicable. Mitigation measures presented in Parks and Recreation, Section 3.1.1.3, Traffic and Transportation/Pedestrian and Bicycle Facilities, Section 3.2.6, Noise, Section 3.2.7, and Construction Impacts, Section 3.6 of this environmental document have been developed to minimize impacts to the neighborhoods affected by the project construction and operation. The following mitigation measures are provided in addition to specific measures in respective sections indicated earlier. These specifically include the aesthetic design theme and the assistance mandated by the Uniform Relocation Act, as amended, provided during the relocation process.

Minimization and Mitigation Measures

C-1 The overall Centennial Corridor aesthetic design theme shall be compatible with surrounding neighborhoods and in keeping with the overall Westside Parkway design theme, to the extent feasible, including landscaping, aesthetic soundwall, and bridge treatments.

C-2 Caltrans, in coordination with the City of Bakersfield, shall prepare a relocation analysis as part of the Final Relocation Impact Report. The results will be incorporated into the final environmental document. The relocation analysis will enable the relocation activities to be planned so that the problems associated with the displacement of individuals, families, and businesses are recognized in advance of moves and so that solutions are developed to minimize the adverse impacts of displacement. The scope of planning will be based on the complexity and nature of the anticipated displacement activity, including the evaluation of program resources available to carry out timely and orderly relocations.

C-3 Close coordination with the Kern County Department of Human Services shall be undertaken to prepare a special publication for the residents of the Centennial Corridor project area that will identify the variety of social service providers available from metropolitan Bakersfield and Kern County public and private community-based organizations, including local religious institutions. The publication, which will be prepared in both English and Spanish, will also include contact numbers and the methods to obtain those services. Hard copies of the publication will be widely distributed in addition to online versions being placed on a website for viewing and downloading. The following services should be anticipated: employment opportunities and workforce development; legal services; information about financial and tax consequences of relocation; possible homeowner credit-repair counseling; first-time buyer counseling; and other services for special needs populations, including disabled, low-income, and senior citizens.

3.1.4.2 Relocation and Property Acquisition

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 CFR Part 24. The purpose of the Relocation Assistance Program is to ensure that persons displaced as a result of a transportation project are treated fairly, consistently and equitably so that such persons will not suffer disproportionate injuries as a result of projects designed for the benefit of the public as a whole. See Appendix D in Volume 2 for a summary of the Relocation Assistance Program.

All relocation services and benefits are administered without regard to race, color, national origin, or sex in compliance with Title VI of the Civil Rights Act (42 U.S. Code 2000d, et seq.). See Appendix C in Volume 2 for a copy of Caltrans' Title VI Policy Statement.

Affected Environment

Information for this section comes from the *Draft Relocation Impact Report* (November 2012) and the *Community Impact Assessment* (September 2013) prepared for the project.

The project sits in the metropolitan Bakersfield area, which is densely developed. All Segment 1 alternatives would result in displacements (full acquisitions) or partial acquisitions of residential and non-residential properties. Residential properties include single-family residences and multi-family residences. No mobile homes would be directly affected by the project, and group housing is not known to be affected. The non-residential properties include hotels and motels, medical centers and clinics, gas stations, restaurants, fast-food outlets, mini-storage facilities, liquor stores, auto body or auto repair businesses, used-car dealerships, retail stores, office buildings, a privately owned nursery school, industrial/manufacturing buildings, and an animal hospital.

Environmental Consequences

All three build alternatives would result in numerous full acquisitions, partial acquisitions, permanent easements, and temporary construction easements, as shown in Figures 3-10a through 3-10c (provided in Volume 2). A list of potentially affected properties, including affected businesses, for each alternative is presented in the *Community Impact Assessment* and can also be found in Appendix G in Volume 2 of this environmental document. The design plans showing the locations of the affected properties are provided in Appendix E in Volume 2. The corresponding right-of-way maps showing potentially affected properties can be found in the *Draft Relocation Impact Report* prepared for this project.

Adequate relocation resources for residential displacements would be available within a 15-mile radius of the project area. A 15-mile radius replacement area was chosen because it has a sufficient supply of replacement single-family and multi-family dwelling units, as well as comparable commercial sales data matching similar socioeconomic characteristics of the existing population. The replacement area contains public amenities similar to the existing community, including access to public transportation, public and private educational facilities, major commercial outlets, and entertainment venues.

The project area contains a relatively high proportion of elderly residents, presenting a challenge for relocation because of the burden of the cost of housing and their often fixed and limited incomes. The elderly also often have special physical needs, and enhanced relocation advisory assistance may be necessary in such cases. Moving seniors to new housing may also require changes to the replacement housing to meet Americans with Disabilities Act (ADA) compliance requirements. In addition,

particular medical needs—including at-home medical care, access to public transit, home delivery services, and lifestyle preferences—may likely require sensitive responses to those needs.

Another factor for consideration is accommodation of low-income and non-English speaking populations. Recommended mitigation measures contain provisions to ensure the relocation needs of the elderly, low-income, and non-English speaking residents are met.

The current real estate vacancy rates in Bakersfield total nearly 10 percent in the commercial office market, 14 percent in retail, and 11 percent in the industrial sector. While recognizing the normally expected difficulty in relocating and reestablishing certain types of non-residential properties, the report concluded that there is ample space available in the current real estate market, and both purchase prices and lease rates are competitive within Bakersfield to accommodate those needs.

The severity of non-residential property impacts would vary with the type of business displaced. Certain businesses—such as automotive repair garages, gasoline service stations, auto detailing, and other similar businesses—typically experience a greater challenge in finding a suitable replacement site because these types of businesses traditionally serve localized market areas and are only allowed in certain areas as they are restricted by zoning. While Alternatives A and B each have two such properties, Alternative C would require right-of-way acquisition from 18 automobile-oriented business operations, as well as four auto sales lots east of State Route 99.

This may also be the case for some of the business parks that would be displaced in Alternative C, such as the business park complexes at 1400, 4000, 4100, 4200, and 4300 Easton Drive, which support a variety of enterprises and would no longer find an adequate replacement parcel within the boundaries of the city of Bakersfield proper, though most of the individual operations within these business parks do not appear to need large amounts of space.

Property uses in the Centennial Corridor, such as a veterinary clinic, a bowling alley, massage therapy, or a cocktail lounge may also be difficult to relocate due to zoning restrictions, the need to reapply for licenses, or the ability to find an existing facility that can accommodate that same functional use. Of these types of property, Alternative C has the most with seven; Alternatives A and B each have three businesses which fall within this category.

In addition, the current recession may have weakened some marginal businesses to the point where relocation or disruption of their business could result in the failure of these businesses altogether. At this stage of the environmental analysis, however, it is not possible to know the specific businesses for which this might hold true.

Certain types of business operations within each build alternative alignment may hold a particular niche within the community or serve important social roles within the community. For example, this could include certain hair salons or barber shops,

neighborhood bars and restaurants, the bowling alley, and so forth. To take another example, the Little Red School House, a child-care facility established in 1967, which would be displaced by Alternative B, is the type of business for which it takes years to build a good reputation and often grows by word of mouth among parents. Relocation in the same general locale would be important. While classifying such properties necessarily involves subjective judgment, it appears that each of the three build alternatives have but a very small handful of properties that would fall within this category, with the most being potentially displaced by Alternative C.

Alternative A

Residential Displacements

As shown in Table 3.8, Alternative A would displace the most residential units among the three build alternatives, with a total of 356: 140 single-family residences, 74 duplex/triplex units (the most among the three alternatives), and 142 apartment units (also the most among the three alternatives). Based on California Department of Finance 2010 household data for the city of Bakersfield (3.1 average persons per household), Alternative A would displace an estimated 1,104 persons.

Table 3.8 Type of Residential Displacements for Each Alternative

Type	Alternative		
	A	B	C
Single-Family Residence	140	200	88
Duplex/Triplex (2 or 3 units)	74	16	16
Apartment House Units (Building with 4 or more units)	142	94	29
Total Residential Units Displaced	356	310	133
Total Persons Displaced (based on 3.1 persons per unit)	1,104	961	413
Source: Developed from the *Community Impact Assessment* 2013.			

The most residential displacements for Alternative A would be south of Mohawk Street between Truxtun Avenue and California Avenue. In this area, an estimated 26 and 38 condominiums would be taken from two Greenbrier condominium complexes on Mohawk Street and Lennox Avenue, substantially reducing the number of available units in this complex.

A second area of residential acquisition would occur south of Stockdale Highway between South Montclair Street and Williamson Way. In this area, an estimated 60 single-family homes would be taken from within the Rancho Vista subdivision neighborhood of Southwest Bakersfield. The acquisitions in this area would cut through the northern edge and middle half of an early post-war subdivision.

In another area of residential acquisition on the south side of proposed State Route 58 at Chester Avenue, a cluster of eight single-family homes would be taken. Adequate relocation resources for residential displacements would be available within a 15-mile radius of the project area. Therefore, no adverse effect on the overall housing supply in the area would result from implementation of Alternative A.

Note that about 77 percent of the residential units to be displaced in Alternative A are occupied by renters.

Non-residential Displacements

As shown in Table 3.9, Alternative A would displace 127 non-residential properties.

Commercial business displacements make up the largest category of displaced businesses. This category would include professional offices, retail merchants, banks, medical offices and dental clinics, real estate and mortgage offices, restaurants, fast-food outlets, mini-storage facilities, and private schools.

Table 3.9 Non-residential Displacements for Each Alternative

Type	Alternative		
	A	B	C
Commercial Businesses	127	106	184
Industrial/Manufacturing Businesses	0	15	13
Non-profit Organizations	0	0	1
Total Non-residential Units Displaced	127	121	198
Source: Developed from the *Community Impact Assessment* 2013.			

Most business displacements for Alternative A would occur near the California Avenue/Stockdale Highway intersection, where businesses would be displaced surrounding the Lennox/California Avenue intersection and east of California Avenue extending southeasterly to Stockdale Highway. In addition, businesses would be displaced in the area south of Stockdale Highway, from Real Road to State Route 99, and would cause several scattered displacements south of this location on the west side of State Route 99 and also in the transition area to State Route 58. Alternative A would displace fast-food, retail, office, public storage (405 units), the Public Health Education Center (a nursing school), and banking, restaurant, and market businesses.

Most non-residential properties directly affected by implementation of any of the build alternatives would be able to find suitable replacement sites nearby.

Partial Acquisitions

Partial acquisitions are property acquisitions needed for the project that do not require the entire property. Table 3.10 identifies the partial acquisitions by type and alternative.

Table 3.10 Number of Parcels Subject to Partial Acquisitions by Land Use Type

Land Use Type	Alternative A	Alternative B	Alternative C
Vacant Land	14	12	11
Single-Family Residential	13	33	8
Multi-Family Residential	5	1	1
Commercial/Industrial	16	15	22
Farm/Agricultural	6	6	6
Permanent and/or Temporary Easements	50	61	36
Other[1]	5	1	2
Total Partial Acquisitions	**109**	**129**	**86**

[1] "Other" refers to churches, park and ride facilities, flood channels, parks, drainage basins and public lands.
Source: Developed from the *Community Impact Assessment* 2013.

Alternative A would result in partial acquisitions of 18 residential parcels, 16 commercial parcels, and 25 other various land uses. There would be 50 permanent easements and/or temporary construction easements required. This alternative would also encroach into the Kaiser Health Care Center site at 3501 Stockdale Highway by an estimated 5.8 percent of the site, affecting mostly onsite parking.

Economic Considerations

Property tax, sales tax, and employment are three economic parameters considered for assessing effects from displacement activities. Certain economic benefits would come with implementation of any of the build alternatives as calculated as part of a Federal Highway Administration Surface Transportation Efficiency Analysis Model (STEAM). These are not taken into account in the analysis below, however, though they can be quite substantial. Such economic improvements are measured incrementally, in part by time savings on freight transport services and less roadway congestion and traffic delay, potentially saving drivers travel time, fuel, auto repair, and maintenance; and reduction in property damage and lower medical costs attributable to fewer vehicle crashes. Collectively, these savings are estimated to total more than $1.1 billion over the 20-year life cycle of the project.

Property Tax: Although Alternative A would require the permanent acquisition of a number of properties, the potential loss of property tax base with implementation of this alternative would not be considered substantial. Based on the current real estate data for the project area, the total value of property tax paid by these property owners is in the range of $1 million annually. The total assessed value for the properties is about $85 million. Therefore, the loss of property tax from these businesses would be about 1 percent of the total property tax revenue currently received by the City of Bakersfield and the County of Kern.

Sales Tax: The sales tax loss for the City of Bakersfield from the aggregate loss in retail sales is estimated to be less than $1 million in the event that all displacees were to move out of the city (worst case). Since most displaced people are expected to be relocated within the city, no adverse effect to sales tax revenue is anticipated.

Employment: Displacement of businesses as a result of the required right-of-way acquisition would cause some loss in employment due to relocation. Because most businesses are expected to be successfully relocated within the city, impacts on employment are not expected to be adverse. Should employees of businesses decide not to work at the new business location, then they would lose their employment. It is also possible that a business may eventually fail if the new site selected proves to be inadequate. In such a case, jobs would be lost. There may even be a few people who would be displaced from their homes, but not lose their place of employment; however, they may be forced to travel much farther, resulting in higher commuting costs. In such cases, their overall net income would be reduced in the short run and eventually may lead to job changes. Overall, experience with measuring employment effects of past transportation projects, as reflected in national research studies, shows that effects are not likely to be substantively disruptive for the vast majority of people affected by the project.

Alternative B

Residential Displacements

As shown in Table 3.8, Alternative B would displace 310 residential units, with the largest number of single-family residences (200) among the three build alternatives. Alternative B would also displace 16 duplex/triplex units and 94 apartment units.

Using California Department of Finance 2010 household data for the city of Bakersfield (3.1 average persons per household), Alternative B would displace 961 persons. The most residential displacements for Alternative B lie in the area between California Avenue and Stockdale Highway, east of Centennial Park. More than 150 single-family homes would be taken along this stretch of the project. This would occur through the middle portion of the Westpark community, effectively resulting in two smaller neighborhoods separated by the new freeway.

Another area of residential acquisition sits on the south side of the proposed State Route 58 alignment, at Chester Avenue. A cluster of eight single-family homes would be taken at this location. Adequate relocation resources for residential displacements would be available within a 15-mile radius of the Alternative B project area.

Note that about 51 percent of residential units displaced in Alternative B are occupied by renters.

Non-residential Displacements

As shown in Table 3.9, Alternative B would displace the fewest non-residential properties and associated businesses, with 121. Commercial business displacements constitute the largest category of displaced businesses. Alternative B would displace 15 industrial/manufacturing businesses. It is expected that these properties could find replacement parcels well within the 50-mile range.

For Alternative B, business displacements would occur in the area south of Carrier Canal extending to California Avenue, and then again in the same areas west of State

Route 99 and transitioning to State Route 58. Alternative B would displace offices and 405 public storage units. This alternative would displace the Little Red School House, a private day-care facility at Easton Drive and California Avenue.

Alternative B would displace many of the same types of businesses affected under Alternative A, though it would affect fewer fast-food outlets. Alternative A has six fast-food outlets, Alternative C has four, and Alternative B has one. Alternative B, however, would displace an estimated 12 office buildings compared to 17 within Alternative A. Very few of the properties would appear to offer unique challenges. Two auto-related businesses and three massage therapy businesses would appear to be the most problematic. Ample space is available in the current real estate market, and both purchase prices and lease rates are competitive within Bakersfield to accommodate those needs.

Most non-residential properties directly affected by implementation of Alternative B would be able to find suitable replacement sites nearby.

Partial Acquisitions

As shown in Table 3.10, Alternative B would result in partial acquisitions of 34 residential parcels, 15 commercial parcels, and 19 other various land uses. There would be 61 permanent easements and/or temporary construction easements. This alternative would also encroach into the Kaiser Health Care Center site and affect an estimated 4.8 percent of the site, mostly parking.

Economic Considerations

Property Tax: Based on current real estate data for this project, the total value of property tax paid by potentially affected properties under Alternative B is about $0.5 million annually. The total assessed value for the properties is about $47 million. Therefore, the worst-case loss of property tax from these businesses would be less than 1 percent of the total property tax revenue currently received by the City of Bakersfield and the County of Kern.

Sales Tax: The sales tax loss for the City of Bakersfield from the aggregate loss in retail sales is estimated to be less than $0.8 million in the event all displacees were to move out of the city (worst case). Since most displaced people are expected to relocate within the city, no adverse effect to sales tax revenue is expected.

Employment: Similar to Alternative A, because most businesses are expected to be successfully relocated within the city, the impacts on employment are not expected to be adverse.

Alternative C

Residential Displacements

As shown in Table 3.8, Alternative C would displace 133 residential units. Of these, 88 would be single-family residences, 16 would be duplex/triplex units, and 29 would be apartment units.

Using California Department of Finance 2010 household data for the city of Bakersfield (3.1 average persons per household), Alternative C would displace 413 persons. Most residential displacements (an estimated cluster of 71 single-family units) for Alternative C would be west of State Route 99 between Palm Avenue and Stockdale Highway, many of them on Oakdale Drive and Wetherley Drive. These acquisitions would occur on the eastern edge of the established residential neighborhood, further extending the influence of the freeway barrier into that area.

Another area of residential acquisition sits on the south side of proposed State Route 58, at Chester Avenue. A cluster of eight single-family homes there would be taken. Adequate relocation resources for residential displacements would be available within a 15-mile radius of the Alternative C project area.

Note that about 59 percent of residential units displaced in Alternative C are occupied by renters.

Non-residential Displacements

As shown in Table 3.9, Alternative C would displace the most non-residential properties, with 198. Commercial business displacements make up the largest category of displaced businesses. Alternative C would displace 13 industrial/ manufacturing businesses.

Most of the Alternative C business displacements would occur in the area from Truxtun Avenue to State Route 99, south of the BNSF Railway tracks, and again in the same areas west of State Route 99 and transitioning to State Route 58 described above under Alternative A. Alternative C would involve displacement of all or parts of eight business parks on Easton Drive. The alternative would also displace an animal hospital at 2905 Brundage Lane and an animal emergency clinic at 4300 Easton Drive.

Ample space is available in the current real estate market, and both purchase prices and lease rates are competitive within Bakersfield to accommodate those needs. Most of the businesses to be displaced have been in operation 7 years or less, although Alternative C would also displace a substantial number of businesses that have been in operation from 8 years to more than 15 years; these businesses could have long-established local clientele loyalties and site identities that may entail some additional difficulties for relocation.

Certain types of businesses may hold a particular niche in the community. For example, auto repair shops of which there are 13 in the Alternative C alignment (versus none in either Alternative A or B) may have built up a fair amount of repeat business based on customers pleased with their services, and they may rely on their recommended referrals. On the other hand, Alternative B has businesses which would be displaced which appear to especially cater to older residents, reflecting the nearby neighborhood demographics. These include the Walls Hearing Aid Center, Procare Hospice, and Affordable Dentures. Also, Alternative C would displace more office buildings (an estimated of 58) as compared to Alternatives A and B.

Most non-residential properties directly affected by implementation of any of the build alternatives would be able to find suitable replacement sites nearby.

Partial Acquisitions

Table 3.10 showed the number of partial acquisitions by type and alternative. Alternative C would result in partial acquisitions of 9 residential parcels, 22 commercial parcels, and 19 other various land uses. In addition, there would be 36 permanent and/or temporary construction easements. This alternative would also encroach into the Kaiser Health Care Center site, affecting an estimated 2 percent of the site, mostly parking.

Economic Considerations

Property Tax: Based on the current real estate data for this project, the total value of property tax paid by the potentially affected property owners under Alternative C is estimated at less than $0.8 million annually. The total assessed value for the properties is $70 million. Therefore, the worst-case loss of property tax from these businesses would be about 1 percent of the total property tax revenue currently received by the City of Bakersfield and the County of Kern.

Sales Tax: The sales tax loss for the City of Bakersfield from the aggregate loss in retail sales is estimated to be less than $0.4 million in the event all displacees were to move out of the city (worst case). Since most displaced people are expected to be relocated within the city, no adverse effect to sales tax revenue is expected.

Employment: As under Alternatives A and B, because most businesses are expected to be successfully relocated within the city, the impacts on employment are not expected to be adverse.

No-Build Alternative

No relocation of residences or businesses would be required under this alternative.

Avoidance, Minimization, and/or Mitigation Measures

Standard Condition

The following standard condition and mitigation measure would apply to all three build alternatives:

SC-R-1 Caltrans, in coordination with the City of Bakersfield, shall implement all property acquisition and relocation activities in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act (Uniform Act) of 1970 (Public Law 91-646, 84 Stat. 1894). The Uniform Act mandates that certain relocation services and payments be made available to eligible residents, businesses, and non-profit organizations displaced by the project. The Uniform Act provides uniform and equitable treatment by federal or federally assisted programs of persons displaced from their homes, businesses, or farms, and establishes uniform and equitable land acquisition policies. See Appendix D in

Volume 2 for more information on the Caltrans Relocation Assistance Program.

Mitigation Measure

R-1 The following measures may be considered by Caltrans and the City of Bakersfield for incorporation into the relocation plan to minimize impacts to displaced businesses and residences:

- Disruption of children's education shall be minimized to the extent feasible. This may include, where possible, scheduling the relocation of families with school-aged children during the months of June through August, and identifying, as a priority, replacement housing options within the same Bakersfield public and private school district for those families who wish to keep their children there.
- All relocation assistance materials shall be written in a non-technical way and be available in Spanish and English. One or more of the relocation specialists shall be fluent in Spanish; have demonstrated training/be certified from the International Right-of-Way Association; and have no fewer than five years of experience in explaining to potentially affected homeowners, tenants, and businesses, the provisions of the Uniform Relocation Act, as amended.
- To the extent applicable, relocation of residential and non-residential properties shall be phased over time so that displacees have an opportunity to select the best replacement sites without competing with other affected property owners within the same community.
- To the extent applicable, a lease-back of non-residential properties shall be considered to allow those proprietors who wish to continue to conduct their business at their current location as long as it is feasible.
- Last Resort Housing Program payments shall be used to relocate residential households being displaced, if necessary, as provided for by the Uniform Relocation Act, as amended.
- One or more specialists on the relocation team with prior experience working with people with special needs—especially the elderly, disabled, and low-income population groups—shall be made available to facilitate the relocation process.
- Supplemental transportation at no cost shall be offered for displaced persons to inspect potential relocation housing should they be unable to use their own transportation.
- At least one "business fair" shall be conducted to provide information to those businesses facing displacement. The fair will be an opportunity to provide businesses with the information and resources concerning how to optimize the impending relocations. Among people

expected to participate are those working in the commercial leasing sector, moving companies, and others.

- In advance of potential relocations of minority-owned businesses, outreach to such organizations as the Kern County Black Chamber of Commerce and Kern County Hispanic Chamber of Commerce shall be undertaken to identify resources that may be of particular help to such businesses.

3.1.4.3 Environmental Justice

Regulatory Setting

All projects involving a federal action must comply with Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,* signed by President William J. Clinton on February 11, 1994. This 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. In 2010, the poverty threshold for a family of three was $18,310 and for a family of four was $22,050.

All considerations under Title VI of the Civil Rights Act of 1964 and related statutes will also be observed for this project. Caltrans' commitment to upholding the mandates of Title VI is demonstrated by its Title VI Policy Statement, signed by the Director (see Appendix C in Volume 2).

Affected Environment

This section identifies minority and low-income populations in the project area that would be subject to environmental justice analysis. The percentage of minorities and low-income populations for each alignment area is compared to related information for the city and county. To be certain that no environmental justice community is overlooked, this process is repeated for individual areas.

The project passes through portions of 12 census tracts from which socioeconomic data from the 2010 U.S. Decennial Census have been collected. Table 3.11 lists the census tracts and respective block groups for all three build alternatives and provides the race and ethnic composition for each block group. The city of Bakersfield and Kern County serve as communities of comparison, and the race and ethnic composition for these two jurisdictions are also included in Table 3.11.

As shown in Table 3.11, the overall racial composition of the city of Bakersfield is about 46 percent Hispanic/Latino and about 38 percent white, with people of other race and ethnicity categories making up about 17 percent of the city population. The overall racial composition of Kern County is about 49 percent Hispanic/Latino and about 39 percent white, with people of other race and ethnicity categories making up about 12 percent of the remaining county population; therefore, the minority population makes up about 63 and 61 percent of the total populations of the city and

county, respectively. Note that beginning with the 2000 Census individuals were allowed to identify themselves as belonging to more than one race so percentages will total more than 100 percent.

Alternative A

As shown in Figure 3-9a (provided in Volume 2) and listed in Table 3.11, Alternative A passes through 17 block groups, which together contain a population that is about 43 percent white, 41 percent Hispanic/Latino, and 9 percent African-American, with people of other race and ethnicity categories making up the remaining 7 percent of the population. As a whole, the 17 block groups that contain the Alternative A alignment hold a minority population of about 57 percent, which is lower than the minority population in the city and county, estimated at about 63 and 61 percent, respectively.

When four Census block groups are broken out from the totals identified above, they would be considered environmental justice communities because the proportion of minorities exceed city and county averages by 10 percent or more. The environmental justice block groups, shown in Figure 3-9a (provided in Volume 2), are as follows:

- Census Tract 20.00, Block Group 3 (93 percent minority)—this area also has a median income below the poverty guideline
- Census Tract 26.00, Block Group 3 (88 percent minority)
- Census Tract 27.00, Block Group 5 (75 percent minority)
- Census Tract 28.12, Block Group 3 (78 percent minority)

Alternative A passes through 11 census tracts that together contain 18,807 households, with an average household size of about three people. The annual median household income for this area is $44,620 compared with $53,997 in the city and $47,089 in the county, which have an average household size of about three people; therefore, the study area for Alternative A would not be considered a low-income community because the average income of residents is well above the federal poverty level ($22,050 for a family of four). However, as noted above, Census Tract 20.00 Block Group 3 qualifies as a low-income area when considered independently of the rest of the alignment area.

Alternative B

As shown in Figure 3-9b (provided in Volume 2) and listed in Table 3.11, Alternative B passes through 16 block groups that together contain a population that is about 44 percent white, about 41 percent Hispanic/Latino, and about 8 percent African-American, with people of other race and ethnicity categories making up about 7 percent of the remaining population. As a whole, the Alternative B study area population is about 56 percent minority, which is lower than the minority population in the city and county, estimated at 63 and 61 percent, respectively.

The Alternative B study area would pass through three of the same census block groups as Alternative A that would be considered environmental justice communities:

- Census Tract 20.00, Block Group 3 (93 percent minority)—this area also has a median income below the poverty guideline
- Census Tract 26.00, Block Group 3 (88 percent minority)
- Census Tract 27.00, Block Group 5 (74 percent minority)

Alternative B passes through 11 census tracts that together contain 18,807 households, with an average household size of about three people. The median household income for this area is $44,620, compared with $53,997 for the city and $47,089 for the county; therefore, the Alternative B study area would not be considered a low-income population because the average income of residents is well above the federal poverty threshold ($22,050 for a family of four). However, as noted above, Census Tract 20.00 Block Group 3 qualifies as a low-income area when considered independently of the rest of the alignment area.

Alternative C

As shown in Figure 3-9c (provided in Volume 2) and listed in Table 3.11, Alternative C passes through 15 block groups that together contain a population that is about 42 percent white, about 42 percent Hispanic/Latino, and about 8 percent African-American, with people of other race and ethnicity categories making up about 7 percent of the remaining population. The Alternative C study area population is about 57 percent minority, which is lower than the minority population in the city and county, estimated at 63 and 61 percent, respectively.

The Alternative C study area would also pass through the same three census block groups that would be considered environmental justice communities as those listed above under Alternative B. In addition, most of the residential relocations in Alternative C are in a single census tract block group (Census Tract 18.01 Block Group 1) that has an African-American population more than 60 percent higher than the city average and more than 2.5 times the county average. Because so many residential relocations are concentrated in this single block group, it is treated as an environmental justice community.

Alternative C passes through 12 census tracts that together contain 20,714 households, with an average household size of 2.8 people. The annual median household income for this area is $45,112, compared with $53,997 and $47,089 in the city and county, respectively; therefore, the Alternative C study area would not be considered a low-income population because the average income of residents is well above the federal poverty threshold ($22,050 for a family of four). However, as noted above, Census Tract 20.00 Block Group 3 qualifies as a low-income area when considered independently of the rest of the alignment area.

Table 3.11 Race and Ethnic Composition of the Project Area Population By Block Group

Geographic Area	White	Black or African-American	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Other Race/Two or More Races	Hispanic or Latino of Any Race
City of Bakersfield	131,311	26,677	2,265	20,496	357	8,172	158,205
	38%	8%	1%	6%	0%	2%	46%
Kern County	323,794	45,377	5,893	33,100	995	17,439	413,033
	39%	5%	1%	4%	0%	2%	49%
Alternative A							
Census Tract 5.07, Block Group 1	2,486	45	39	130	3	58	837
	69%	1%	1%	4%	0%	2%	23%
Census Tract 18.01, Block Group 3	1,062	216	3	94	3	67	675
	50%	10%	0%	4%	0%	3%	32%
Census Tract 18.02, Block Group 1	394	114	4	94	0	42	329
	40%	12%	0%	10%	0%	4%	34%
Census Tract 18.02, Block Group 3	526	28	8	23	0	30	420
	60%	7%	1%	4%	0%	2%	26%
Census Tract 19.01, Block Group 2	526	28	8	23	0	30	379
	53%	3%	1%	2%	0%	3%	38%
Census Tract 19.01, Block Group 3	329	44	10	14	0	28	354
	42%	6%	1%	2%	0%	4%	45%
Census Tract 19.02, Block Group 3	374	45	7	27	1	17	399
	43%	5%	1%	3%	0%	2%	46%
Census Tract 20.00, Block Group 3	118	517	7	84	0	44	1,031
	7%	29%	0%	5%	0%	2%	57%
Census Tract 26.00, Block Group 3	142	186	7	19	2	28	829
	12%	15%	1%	2%	0%	2%	68%
Census Tract 27.00, Block Group 1	235	47	15	29	0	10	448
	30%	6%	2%	4%	0%	1%	57%
Census Tract 27.00, Block Group 4	256	41	2	19	1	14	422
	34%	5%	0%	3%	0%	2%	56%
Census Tract 27.00, Block Group 5	249	29	7	21	0	26	638
	26%	3%	1%	2%	0%	3%	66%

Table 3.11 Race and Ethnic Composition of the Project Area Population By Block Group

Geographic Area	White	Black or African-American	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Other Race/Two or More Races	Hispanic or Latino of Any Race
Census Tract 28.12, Block Group 1	510	119	19	18	0	29	561
	41%	9%	2%	1%	0%	2%	45%
Census Tract 28.12, Block Group 2	595	82	11	11	0	30	432
	51%	7%	1%	1%	0%	3%	37%
Census Tract 28.12, Block Group 3	445	324	14	31	3	52	1,070
	23%	17%	1%	2%	0%	3%	55%
Census Tract 28.13, Block Group 1	547	82	3	37	0	15	503
	46%	7%	0%	3%	0%	1%	42%
Census Tract 38.12, Block Group 2	1,057	92	16	144	3	48	479
	57%	5%	1%	8%	0%	3%	26%
Grand Total	**10,304**	**2,126**	**191**	**854**	**18**	**569**	**9,806**
	43%	**9%**	**1%**	**4%**	**0%**	**2%**	**41%**
Alternative B							
Census Tract 5.07, Block Group 1	2,486	45	39	130	3	58	837
	69%	1%	1%	4%	0%	2%	23%
Census Tract 18.01, Block Group 2	1,002	166	20	64	4	48	1,025
	43%	7%	1%	3%	0%	2%	44%
Census Tract 18.01, Block Group 3	1,062	216	3	94	3	67	675
	50%	10%	0%	4%	0%	3%	32%
Census Tract 18.02, Block Group 1	394	114	4	94	0	42	329
	40%	12%	0%	10%	0%	4%	34%
Census Tract 19.01, Block Group 2	526	28	8	23	0	30	379
	53%	3%	1%	2%	0%	3%	38%
Census Tract 19.01, Block Group 3	329	44	10	14	0	28	354
	42%	6%	1%	2%	0%	4%	45%
Census Tract 19.02, Block Group 3	374	45	7	27	1	17	399
	43%	5%	1%	3%	0%	2%	46%
Census Tract 20.00, Block Group 3	118	517	7	84	0	44	1,031
	7%	29%	0%	5%	0%	2%	57%

Table 3.11 Race and Ethnic Composition of the Project Area Population By Block Group

Geographic Area	White	Black or African-American	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Other Race/Two or More Races	Hispanic or Latino of Any Race
Census Tract 26.00, Block Group 3	142	186	7	19	2	28	829
	12%	15%	1%	2%	0%	2%	68%
Census Tract 27.00, Block Group 1	235	47	15	29	0	10	448
	30%	6%	2%	4%	0%	1%	57%
Census Tract 27.00, Block Group 4	256	41	2	19	1	14	422
	34%	5%	0%	3%	0%	2%	56%
Census Tract 27.00, Block Group 5	249	29	7	21	0	26	638
	26%	3%	1%	2%	0%	3%	66%
Census Tract 28.12, Block Group 1	510	119	19	18	0	29	561
	41%	9%	2%	1%	0%	2%	45%
Census Tract 28.12, Block Group 2	595	82	11	11	0	30	432
	51%	7%	1%	1%	0%	3%	37%
Census Tract 28.13, Block Group 1	547	82	3	37	0	15	503
	46%	7%	0%	3%	0%	1%	42%
Census Tract 38.12, Block Group 2	1,057	92	16	144	3	48	479
	57%	5%	1%	8%	0%	3%	26%
Grand Total	**9,882**	**1,853**	**178**	**828**	**17**	**534**	**9,341**
	44%	**8%**	**1%**	**4%**	**0%**	**2%**	**41%**
Alternative C							
Census Tract 5.07, Block Group 1	2,486	45	39	130	3	58	837
	69%	1%	1%	4%	0%	2%	23%
Census Tract 17.00, Block Group 4	365	22	7	7	1	28	232
	55%	3%	1%	1%	0%	4%	35%
Census Tract 18.01, Block Group 1	383	151	7	42	4	26	517
	34%	13%	1%	4%	0%	2%	46%
Census Tract 18.02, Block Group 1	394	114	4	94	0	42	329
	40%	12%	0%	10%	0%	4%	34%
Census Tract 19.01, Block Group 2	526	28	8	23	0	30	379
	53%	3%	1%	2%	0%	3%	38%

Table 3.11 Race and Ethnic Composition of the Project Area Population By Block Group

Geographic Area	White	Black or African-American	American Indian and Alaska Native	Asian	Native Hawaiian and Other Pacific Islander	Other Race/Two or More Races	Hispanic or Latino of Any Race
Census Tract 19.01, Block Group 3	329	44	10	14	0	28	354
	42%	6%	1%	2%	0%	4%	45%
Census Tract 19.02, Block Group 3	374	45	7	27	1	17	399
	43%	5%	1%	3%	0%	2%	46%
Census Tract 20.00, Block Group 3	118	517	7	84	0	44	1,031
	7%	29%	0%	5%	0%	2%	57%
Census Tract 26.00, Block Group 3	142	186	7	19	2	28	829
	12%	15%	1%	2%	0%	2%	68%
Census Tract 27.00, Block Group 1	235	47	15	29	0	10	448
	30%	6%	2%	4%	0%	1%	57%
Census Tract 27.00, Block Group 4	256	41	2	19	1	14	422
	34%	5%	0%	3%	0%	2%	56%
Census Tract 27.00, Block Group 5	249	29	7	21	0	26	638
	26%	3%	1%	2%	0%	3%	66%
Census Tract 28.12, Block Group 1	510	119	19	18	0	29	561
	41%	9%	2%	1%	0%	2%	45%
Census Tract 28.13, Block Group 1	547	82	3	37	0	15	503
	46%	7%	0%	3%	0%	1%	42%
Census Tract 38.12, Block Group 2	1,057	92	16	144	3	48	479
	57%	5%	1%	8%	0%	3%	26%
Grand Total	**7,971**	**1,562**	**158**	**708**	**15**	**443**	**7,958**
	42%	**8%**	**1%**	**4%**	**0%**	**2%**	**42%**

Note: percentage number is rounded to the nearest one.
Source: Developed from the *Community Impact Assessment* 2013.

Environmental Consequences

This section presents the benefits and adverse impacts in relationship to the overall community and environmental justice neighborhoods. Because there was redundancy in the discussion, report authors and reviewers believed a holistic approach to the Environmental Consequences made more sense. The purpose of this comparison is to determine if there is a disproportionate impact on the environmental justice neighborhoods (i.e., neighborhoods that contain higher percentage of minority and low-income populations when compared to the comparable information for the city and county). Based on the executive order to address environmental justice in minority populations and low-income populations, a disproportionately high and adverse effect on minority and low-income populations means an adverse effect that: (1) is predominately borne by a minority population and/or a low-income population, or (2) will be suffered by the minority population and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or non-low-income population.

Development for the Centennial Corridor is being carried out to ensure that the following environmental justice strategies are followed:

- Avoid, minimize, or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations
- Ensure the full and fair participation by all potentially affected communities in the transportation decision-making process
- Prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations

The study areas for Alternatives A, B, and C contain five census block groups that meet the criteria for considering them as environmental justice communities per Executive Order 12898. Three points should be noted. All three build alternatives go through three of the five block groups; the fourth is next to only Alternative A, and the fifth is affected only by Alternative C. The effects of the alternatives, be they positive or adverse, would be felt equally along each of the alignments. So, while environmental justice communities have been identified, the Centennial Corridor project would not result in “disproportionately high and adverse” effects on environmental justice communities because of the equivalent distribution of the effects on all communities through which the alignments pass.

Because the project serves both intraregional and interregional traffic, the transportation benefits would be equally available to all residents of the county. For example, all users (including transit users, pedestrians, and bicyclists) would benefit from less congested streets. Private vehicles and public transportation would benefit from the continuous east-west route.

Relocations

The combined relocations of residential and commercial properties under Alternative A in the four environmental justice neighborhoods would be 36 compared to 447 relocations in the non-environmental justice neighborhoods. Alternative B would have 7 relocations within environmental justice neighborhoods compared to 424 relocations in non-environmental justice neighborhoods. Alternative C would have 88 relocations compared to 243 relocations. The magnitude of impacts is not appreciably more severe or greater in the environmental justice communities compared to the non-environmental justice communities, nor is the impact predominantly borne by the environmental justice community. It should be noted, however, that most residential relocations for Alternative C would be in environmental justice communities including nearly 90 percent of the single-family home relocations. Moreover, in Census Tracts 20.00, BG 3 and 26.00, BG 5, east of Chester Avenue, containing areas common to all build alternatives with the greatest concentration of environmental justice populations, the project work would involve few property acquisitions and occur mostly within the existing right-of-way.

Air Quality

Overview

Potential effects from air pollutant emissions on sensitive receptors serving communities next to the build alternative alignments, such as schools, day care facilities and senior centers, have been evaluated. The following facilities are within 500 feet of a buffer from a build alternative alignment:

- Little Red School House (on the Alternative B alignment and about 1,700 and 3,500 feet from the Alternative A and C alignments, respectively)—this day care facility would be relocated if Alternative B is selected.
- Child Haven Preschool (about 500 feet from the Alternative A and B alignments, and about 1,000 feet from the Alternative C alignment)
- Caring Corner Day Care Center (about 300 feet from State Route 99 for all build alternative alignments)
- Healthsouth Bakersfield Rehabilitation Hospital (about 500 and 1,400 feet from the Alternative B and C alignments, respectively, and over 2,000 feet from the Alternative A alignment)
- Bakersfield Family Medical (about 500 and 1,900 feet from the Alternative B and C alignments, respectively, and over 2,000 feet from the Alternative A alignment)
- Stockdale Podiatry (200 and 150 feet from the Alternative A and C alignments, respectively)—this outpatient facility provides foot treatment; as an outpatient facility, it is not considered a sensitive receptor to air pollutants
- Kaiser Permanente–Stockdale Medical Office (next to the Alternative A and B alignments, and over 500 feet away from the Alternative C alignment)—this facility contains medical clinics with no inpatient care; therefore, it is not considered a sensitive receptor to air pollutants

The only sensitive community facility receptor that is within neighborhoods with environmental justice populations is the Caring Corner Day Care Center, east of State Route 99. The roadway improvement at this location involves sidewalk relocation for Alternatives A and B but no work under Alternative C. No effect on businesses would occur. Based on the results of the air quality analysis, none of the above facilities would be substantially affected by air pollutant concentrations. One neighborhood park, Saunders Park, west of Oak Street and State Route 99, a portion of which is within the Alternative C alignment, is next to an environmental justice community. Though no detailed park user information is available, Saunders Park is likely used mostly by local residents, including the nearby environmental justice community. No other neighborhood parks sit in environmental justice communities within the Centennial Corridor build alternatives. The analysis indicates that the effects from air pollution concentrations on low-income and minority populations in the study area compared with non-low-income and/or minority populations would be the same. Therefore, there would be no impacts borne predominantly by low-income and/or minority population and, consequently, no disproportionate or high and adverse effects on environmental justice populations, pursuant to Executive Order 12898.

Analysis and Modeling

Air quality has both regional and local components. On a regional scale, there would be no impacts borne predominantly by low-income and/or minority populations or disproportionately experienced by such groups. The effects of emissions from transportation sources are experienced equally across the basin.

On a local scale, there would be no impacts borne predominantly by low-income and/or minority populations or disproportionately experienced by such groups. Using carbon monoxide as an example, the analysis has determined that of the 10 intersections analyzed, seven are near the five identified census block groups with environmental justice populations: Mohawk Street/California Avenue, California Avenue/ Stockdale Highway, Chester Lane/ California Avenue, State Route 99 southbound ramp/ California Avenue, Stine Road/Stockdale Highway, Real Road/Stockdale Highway and H Street/Brundage Lane. At these intersections (as well as the remaining six intersections in the analysis), none of the calculated concentrations were above the established federal or state standards and all have been shown to be about the same in absolute value. A qualitative analysis was done for particulate matter with a diameter less than 10 microns (PM_{10}) and fine particulate matter ($PM_{2.5}$). The modeling predicted concentrations of these air pollutants using a modeling protocol reviewed and approved by the Interagency Coordination Group. Results of the qualitative particulate matter and conformity analysis indicated that 24-hour average concentrations of particulate matter (PM_{10}) along the study area corridor would be less than the currently established applicable National Ambient Air Quality Standard.

Results of the EMFAC modeling and conformity analysis determined that annual average concentrations of fine particulate matter ($PM_{2.5}$) along the study area corridor would be less than the currently established applicable National Ambient Air Quality Standard. Concentrations of fine particulate matter ($PM_{2.5}$) along the study area

corridor would not exceed no-build concentrations and would be in conformity with the State Implementation Plan for achieving the 24-hour fine particulate matter ($PM_{2.5}$) standard.

Therefore, based on these results, there would be no impacts borne predominantly by low-income and/or minority populations, nor would those effects be more severe on such groups. Accordingly, no disproportionate or high and adverse effects on environmental justice populations are expected, pursuant to Executive Order 12898. Detailed air quality analysis and results are presented in the *Air Quality Study Report* (November 2013) prepared for the project.

Mobile Source Air Toxics

For mobile source air toxics, conservative emission estimates for the project opening year (2018) and the horizon operational year (2038) indicate substantial reductions in all locations analyzed (Rosedale Highway between Allen Road and State Route 99, Stockdale Highway between Allen Road and H Street, California Avenue between Stockdale Highway and State Route 99, State Route 99 between Airport Drive and White Lane), except for the Westside Parkway between Allen Road and State Route 99 and State Route 58 between State Route 99 and Cottonwood. Although these two segments of roadway pass through the neighborhoods with environmental justice populations, no hospitals, schools, or day-care facilities sit within the 500 feet of the freeway within the respective environmental justice communities.

The Caring Corner Day Care Center, 300 feet from State Route 99 in a neighborhood with an environmental justice population, would experience a reduction in the mobile source air toxics. The reduction is due in large part to improvements in automotive technology resulting from scheduled regulatory requirements and redirection of traffic once the new freeway is established.

The distribution of low-income and minority populations in the study area compared with non-low-income and/or minority populations is the same; the effects would be felt equally throughout the corridor. So, there would be no impacts borne predominantly by low-income and/or minority populations.

Service-oriented Facilities

As noted in the Relocation Section of the *Community Impact Assessment* for this project, the following service-oriented facilities would be subject to either partial or full acquisition:

Alternative A

- Better Way Services (mental health counseling)—full acquisition
- PathPoint (education and training for young adults with developmental or other disabilities)—full acquisition
- Farmworker Institute for Education and Leadership Development—full acquisition

Alternative B

- Healthsouth Bakersfield Rehabilitation Hospital—partial acquisition

Alternative C

- Kern County Department of Human Services—full acquisition

PathPoint and the Farmworker Institute for Education and Leadership Development are next to Tract 28.12 Block Group 3, which is identified as an environmental justice neighborhood. If Alternative A is selected, these facilities would be relocated to an area within the same block group to minimize impacts to the community members using services from these two facilities.

Transportation and Accessibility

Local street changes would be required under each alternative. A road closure at nine spots along each of the Alternatives A and B alignments would be required. Out of these, only one road closure under Alternative A would be within the environmental justice communities. Alternate routes for local access are provided for all the alternatives. No existing transit routes operate on the streets proposed for permanent change/closure; so, there would be no direct effects to transit service due to road changes or closures. Traffic diverted to local streets as a result of any build alternative would not substantially affect transit services.

Each build alternative is designed to maintain existing pedestrian and bicycle travel ways to the extent feasible. Bike routes would be a component of planned Centennial Corridor overcrossings and undercrossings where existing and/or planned routes exist. No local through street access would change under Alternative C; pedestrian, bicycle, and vehicle accessibility to schools and existing links between neighborhoods and schools would stay as they are.

Alternatives A and B would require street closures, which would change local access patterns and, in some cases, potentially lengthen travel distances to community facilities for some pedestrians and cyclists. Impacts to pedestrian and bicycle facilities would not disproportionately affect a minority or low-income community. So, no impacts would be borne predominantly by low-income and/or minority populations; no effects would be more severe on such groups.

No-Build Alternative

Under the No-Build Alternative, no construction would occur; therefore, there would be no environmental justice issues associated with the No-Build Alternative.

Avoidance, Minimization, and/or Mitigation Measures

Alternatives A, B, and C would not cause disproportionately high and adverse effects on minority or low-income populations per Executive Order 12898, so no mitigation is required. Implementation of minimization and mitigation measures outlined elsewhere in this environmental document would minimize impacts on all the local communities, including low-income and minority neighborhoods.

3.1.5 Utilities/Emergency Services

This section addresses potential impacts to public utilities and emergency services that would result from construction of the Centennial Corridor project. Short-term construction impacts are also addressed in Section 3.6.

Affected Environment

The study area for utilities and emergency services impact assessment for Segment 1 includes the area right next to the proposed freeway alignment and the surrounding area that is likely to be disturbed by the proposed freeway construction. The information in this section is from the *Community Impact Assessment* (September 2013) prepared for this project.

Utilities and emergency services for Segments 2 and 3 have been described in their respective environmental documents; there have been no changes since certification of those environmental documents.

Utilities

The project area is served by the following utility providers:

Water Service:	City of Bakersfield, California Water Service Company (CalWater), Big West (water line)
Wastewater:	City of Bakersfield
Storm Drainage:	City of Bakersfield
Gas:	Pacific Gas and Electric (PG&E), Southern California Gas Company
Electric:	Pacific Gas and Electric (PG&E)
Telecommunications:	Bright House Network, AT&T, Time Warner Communications, MCI, Verizon, Alliance, Sprint
Oil and Petroleum Lines:	Alon USA, Mobil Oil Company, San Joaquin Facilities Management Incorporated, Chevron Oil Company, Tricor Incorporated

These service providers have utility lines in areas that would become the right-of-way for the Centennial Corridor project. The following utilities occur within the project's footprint (area of disturbance):

- Water lines, 4 inches to 16 inches in diameter
- Sewer lines, 6 inches to 10 inches in diameter
- Electrical lines, 12 kilovolt underground and overhead lines, and 70- and 115-kilovolt transmission lines on steel towers
- Gas lines, 2 inches to 6 inches in diameter

- Cable television lines, overhead lines, and buried cables in 1-inch to 4-inch ducts
- Oil and petroleum pipelines, 10 inches in diameter
- Oil wells, lines, and flowlines
- Street lights, traffic signals, interconnects, and storage boxes
- Storm drain facilities, 30-inch pipe, a detention basin, and a pump house

Emergency Services

The Kern County and City of Bakersfield Fire Departments provide fire protection services to the area. The Kern County Fire Department also provides emergency medical services. Paramedic and ambulance service is provided by Hall Ambulance, a private company.

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

No changes to utility and emergency service systems for Segments 2 and 3 have occurred since the environmental documents were certified.

Environmental Consequences

Utilities

Common to All Build Alternatives

Utilities are allowed in the Caltrans right-of-way with an encroachment permit. Utility facilities (such as water lines, sewer laterals, electrical connections/lines/poles, natural gas service lines, streetlights, fire hydrants, and cable television lines and utility boxes) in the right-of-way would be subject to abandonment, removal, and relocation or replacement as a result of project construction. Utility companies would be given enough notice to relocate their facilities before construction or at a later stage of construction, as appropriate.

Such coordination is standard during the design phase. Utility relocations would be done using standard engineering practices, so substantial service disruption is not expected.

Existing oil wells within the proposed right-of-way would be abandoned in accordance with the requirements in the California Code of Regulations.

For the improvements proposed in Segment 3 at the intersection of Stockdale Highway and State Route 43, utilities, such as natural gas, electricity, and telephone lines would need to be relocated. The utility relocation plans would be prepared during the design phase. As part of that effort, the design team would work with the utility provider to identify the relocation area that would minimize impact to the various resources. Generally, utilities would be relocated within the existing right-of-way. These areas are already disturbed so adverse impacts are not expected and

implementation of standard engineering practices would ensure that no substantial interruptions of utility service would occur. Should the relocation of the utilities result in impacts to resources, additional environmental clearance will be required.

Alternative A

Alternative A would relocate about 221 utility facilities. Some would be high-risk utility relocations per Caltrans' *Policy on High and Low Risk Underground Facilities within Highway Right of Way*; these would include a 7,800-foot-long section of oil pipeline, an active oil well, and a section of 12-kilovolt underground electrical line. As discussed in Section 3.6, Construction Impacts, the utility lines would be relocated before construction of the road. The utility relocation plans would be prepared during the design phase. As part of that effort, the design team would work with the utility provider to identify the relocation area that would minimize impact to the various resources. Generally, utilities would be relocated within the existing right-of-way. These areas are already disturbed so adverse impacts are not expected and implementation of standard engineering practices would ensure that no substantial interruptions of utility service would occur. Should the relocation of the utilities result in impacts to resources, additional environmental clearance will be required.

Alternative B

Alternative B would relocate about 238 utility lines or facilities. Also, six oil wells and associated lines would be abandoned. High risk utility relocations include abandoning or changing petroleum production pipelines; relocating about 7,800 feet of an existing 10-inch oil pipeline; abandoning or relocating six oil wells and an oil tank; relocating or protecting in place 12-kilovolt underground electrical facilities; and protecting in place a 10-inch gas line in the Union Avenue overcrossing. Other major relocations (not considered high risk) include relocating 70-kilovolt and 115-kilovolt electrical towers. Of the 238 relocations, the 10 Pacific Gas and Electric towers would be relocated in coordination with Pacific Gas and Electric and in compliance with applicable Public Utilities Commission regulations.

The utility relocation plans would be prepared during the design phase. As part of that effort, the design team would work with the utility provider to identify the relocation area that would minimize impact to the various resources. Generally, utilities, with the exception of the large electrical towers, would be relocated within the existing right-of-way. These areas are already disturbed so adverse impacts are not expected and implementation of standard engineering practices would ensure that no substantial interruptions of utility service would occur. Should the relocation of the utilities result in impacts to resources, additional environmental clearance will be required.

Alternative C

Alternative C would relocate about 205 utility lines or facilities. High-risk utility relocations include relocating oil lines; relocating about 9,400 feet of a 10-inch oil pipeline; relocating or protecting in place 12-kilovolt underground electrical facilities; and protecting in place a 10-inch gas line on the Union Avenue overcrossing. Other

major relocations (not considered high risk) include relocating 70-kilovolt and 115-kilovolt electrical towers and relocating five telecommunication towers and one AT&T equipment building. Alternative C would result in the same impacts to the 10 Pacific Gas and Electric towers as Alternative B.

The utility relocation plans would be prepared during the design phase. As part of that effort, the design team would work with the utility provider to identify the relocation area that would minimize impact to the various resources. Generally, utilities, with the exception of the large electrical towers, would be relocated within the existing right-of-way. These areas are already disturbed so adverse impacts are not expected and implementation of standard engineering practices would ensure that no substantial interruptions of utility service would occur. Should the relocation of the utilities result in impacts to resources, additional environmental clearance will be required.

No-Build Alternative

No freeway/roadway improvements would be built under the No-Build Alternative, so no utility relocations would be required under this alternative.

Emergency Services

Common to All Build Alternatives

Where local roads would be closed, emergency access would be changed. Based on conceptual plans reviewed with the City of Bakersfield and County of Kern Fire Departments, no road closures would isolate areas or hinder emergency response times. With reduced congestion, there would be a benefit of potentially faster response times. Impacts to emergency service systems during project construction, such as delays due to construction, are discussed in Section 3.6, Construction Impacts.

No-Build Alternative

The No-Build Alternative would not directly affect traffic patterns, nor would it lead to construction detours that could affect emergency services. In the long term, however, there would be a reduced traffic level of service on State Route 58 that could result in delays for emergency response vehicles.

Avoidance, Minimization, and/or Mitigation Measures

Standard conditions of approval are requirements based on local, state, or federal regulations that are required independently of the California Environmental Quality Act or National Environmental Policy Act analysis but also serve to offset or prevent specific impacts. These have been identified in the Avoidance, Minimization, and Mitigation Measures Section, where appropriate.

The project design minimizes impacts to the existing utility system as much as practicable. Because there would be no impacts to utility systems or emergency services over the long term, no mitigation measures are required. Minimization Measure SC-U-1 has been identified to minimize potential impacts from the

abandonment of the oil wells. Standard conditions for impacts as a result of construction activities are presented in Section 3.6, Construction Impacts.

SC-U-1 Existing oil wells within the proposed right-of-way would be abandoned in accordance with the requirements in the California Code of Regulations. This includes filing a Notice of Intent and preparing an abandonment plan for approval by the California Department of Conservation, Division of Oil, Gas, and Geothermal Resources. Completion of the well abandonment process in compliance with existing regulations would ensure that no environmental hazards are created by the plugging operations or the abandoned well.

3.1.6 Traffic and Transportation/Pedestrian and Bicycle Facilities

This section addresses potential impacts to vehicular traffic and circulation. Impacts to the transit system, pedestrian and bicycle facilities, and parking are also addressed.

Regulatory Setting

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

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

Affected Environment

The traffic and circulation impact analysis in this section is based on the results of the *Traffic Study Report for the Centennial Corridor Project* (November 2012). Analysis on parking, public transportation, and pedestrian and bicycle facilities comes from the *Community Impact Assessment* (September 2013) for this project. The proposed project is consistent with the *State Route 58 Corridor System Management Plan* (September 2011) prepared by Caltrans and approved by the Kern Council of Governments. A project consistency analysis with adopted plans is provided in Section 3.1.1, Land Use.

The study area used for the traffic analysis runs from Cottonwood Road on the east to Interstate 5 on the west, and from just north of State Route 58 (West) (Rosedale Highway) on the north to White Lane on the south. The traffic analysis considers the overall operating conditions of the highway and local street network in the traffic study area for the existing (baseline) condition (2008); the opening year (2018); and the 20-year design life (2038).

This section describes lack of route continuity and summarizes the characteristics of the existing roadway network in the study area, the existing traffic volumes, the truck traffic, and the current operating conditions of the roadway network. Future traffic forecasts for the build alternatives and the No-Build Alternative are presented in the Environmental Consequences section that follows.

Existing Roads and Highways

The purpose of the Centennial Corridor project is to provide route continuity and associated traffic congestion relief along State Route 58 within metropolitan Bakersfield and Kern County from State Route 58 east (at Cottonwood Road) to Interstate 5. The goal of route continuity is to ease the driving task by reducing the need to change lanes and search for directional signing. Route continuity is qualitatively evaluated in terms of driver ease of use, maintaining consistent levels of service and speeds, and by providing an appropriate number of lanes. (Please see Figure 1-3a through 1-3d in Section 1.2 of Chapter 1 which illustrate and describe level of service conditions. Local intersections [i.e. city streets] are considered deficient at level of service D, E, or F. State highway or freeway ramp intersections [owned and operated by Caltrans] are considered deficient at level of service E or F.)

Currently, State Route 58 lacks route continuity from the State Route 58/State Route 99 interchange west to Interstate 5. From the State Route 58/99 interchange, State Route 58 is offset by about 2 miles where State Routes 58 and 99 merge and share a common north-south alignment. Traffic continuing west from the shared portion of State Route 58/State Route 99 must exit at the State Route 178/24th Street off-ramp to access State Route 58 (West) where the road resumes as an east-west local road known as Rosedale Highway/24th Street.

State Route 58 runs west of State Route 99 as an arterial highway (Rosedale Highway) for about 12 miles. Between Allen Road and Mohawk Street, the road is under local control (the city and county, not the state, own the roadway). At State Route 43, State Route 58 is again offset to the north for about 1 mile and shares alignment with State Route 43. From this point, State Route 58 again assumes an east-west alignment as a two-lane roadway for about 8 miles, and then has an interchange with Interstate 5. Table 3.12 describes the existing study area roads and highways.

The lack of route continuity contributes to traffic congestion and reduced levels of service on adjoining highways and local streets. As shown in Table 1.1 in Chapter 1, 16 local intersections with traffic signals along State Route 58 currently operate at level of service E or F during at least one of the peak hours. This condition is

expected to worsen as the population grows, and by 2038, 22 intersections are projected to operate at level of service E or F.

The pattern of regional highways and local arterial streets in the study area is shown in Figure 3-11 (provided in Volume 2). The characteristics of these thoroughfares are summarized in Table 3.12.

Existing Traffic Volumes

Existing traffic volumes presented in this environmental document refer to the traffic volume in 2008, the year the Notice of Preparation for this environmental document was issued.

The average daily traffic volume along State Route 58 is 7,000 vehicles from Interstate 5 to State Route 43, between 7,100 and 21,000 vehicles from State Route 43 to Allen Road; between 40,500 and 49,500 vehicles from Allen Road to State Route 99; and 68,000 vehicles east of State Route 99. The average daily traffic volume along State Route 99 is 100,000 vehicles north of Rosedale Highway; 132,000 vehicles between Rosedale Highway and State Route 58 (East); and 134,000 vehicles south of State Route 58 (East). North of the river, Allen Road carries from 10,000 to 17,000 vehicles per day. Stockdale Highway carries from 18,000 to 34,000 vehicles per day. The daily volumes by road segment, approximately 100 entries, are shown in Figure 2-12 of the *Traffic Study Report for the Centennial Corridor Project* (November 2012).

Truck Traffic

Truck traffic in Kern County accounts for 27 percent of total traffic, compared to a statewide average of 9 percent. The proportion of truck traffic on State Route 99 ranges from 18 to 27 percent, which is two to three times the statewide average. As a critical link in the state transportation network, State Route 58 is used by a large number of regional and inter-regional trucks.

According to 2009 traffic data (*2009 Annual Average Daily Truck Traffic on the California State Highway System*, December 2010), every weekday there are 500 five-axle trucks on State Route 58 east of Enos Lane (7.1 percent of the annual average daily traffic), over 2,000 five-axle trucks west of Mohawk Street (4.9 percent of the annual average daily traffic), 6,700 five-axle trucks east of the interchange with State Route 99 (9.9 percent of the annual average daily traffic) and 8,000 five-axle trucks at the interchange with Cottonwood Road (12.2 percent of the annual average daily traffic).

Without an efficient east-west route through Bakersfield, truck drivers resort to using a dispersed system of inadequate highways, which has strained the transportation network. Truck traffic along the State Route 58 corridor is generally heaviest near the State Route 99 interchanges in Bakersfield, likely due to local and regional trucks using the corridor and the various truck-related land uses (such as agricultural businesses and distribution facilities) along the freeways.

Table 3.12 Study Area Roads and Highways

Facility Name	Type	Direction	Number of Lanes	Road and Highway Characteristics
State Route 99	Freeway	North-South	8	State Route 99 is a north/south facility and is used as an alternate route for Interstate 5. The speed limit is 65 miles per hour in the project study area.
State Route 58	Freeway (East); Local Highway and conventional (West)	East-West	Varies	***Interstate 5 to Allen Road.*** Two-lane conventional highway. Alignment is disjointed by about 1 mile at State Route 43 which has a shared alignment with State Route 58. State Route 43 is also a two-lane conventional highway. ***Allen Road to State Route 99.*** Two lanes in each direction, with outside turn pocket lanes at street intersections. It should be noted the portion of Rosedale Highway between Allen Road and Mohawk Street was previously part of State Route 58 and is now a local roadway. ***State Route 99.*** Four lanes in both north and south directions along a 2-mile shared route with State Route 99. ***State Route 58 East (Barstow-Bakersfield Highway).*** Four to six lane freeway within Bakersfield metro area. Four lane freeway east of Bakersfield.
State Route 178	Arterial/ Freeway	East-West	4	Crosses northeast Bakersfield before extending east through the Kern River Valley past Lake Isabella to State Route 14. State Route 178 is four lanes east of Oak Street to downtown Bakersfield; three lanes in each direction as part of a one-way couplet through downtown; and a four to six lane freeway east of downtown.
Interstate 5	Interstate Highway	North-South	4	A major north-south route of the Interstate Highway System, linking San Diego, Los Angeles, Sacramento, and Redding. Four lanes within Kern County, north of State Route 99 junction.
Truxtun Avenue	Arterial	East-West	4–6	Two lanes in each direction from Coffee Road to downtown Bakersfield and 3 lanes in each direction when approaching Chester Avenue.
New Stine Road (south of State Route 58)/ California Avenue	Arterial	North-South (New Stine); East-West (California)	5–6	South of Stockdale Highway, New Stine Road is striped with bike lanes. The California Avenue alignment turns northeast before extending across downtown Bakersfield. Bike lane striping is discontinued north of Stockdale Highway.
Stockdale Highway (west of State Route 99) /Brundage Lane	Major Arterial	East-West	4–6	Stockdale Highway is a local road with four to six lanes and bike lanes. Brundage Lane is two lanes in each direction east of State Route 99.
Ming Avenue	Major Arterial	East-West	4–6	Two lanes in each direction east of Allen Road, with single and double outside turning lanes. Near Hughes Lane, two lanes in each direction.
Allen Road	Minor Arterial	North-South	2–4	From Rosedale Highway south, one lane in each direction and two lanes in each direction south of the Kern River.

Table 3.12 Study Area Roads and Highways

Facility Name	Type	Direction	Number of Lanes	Road and Highway Characteristics
Calloway Drive/ Old River Road (south of Stockdale Highway)	Arterial	North-South	4–6	Two lanes in each direction from Rosedale Highway south and three lanes in each direction when approaching Brimhall Road. South of Marby Grange Way, the roadway is being widened to three lanes.
Coffee Road/ Gosford Road (south of Stockdale Highway)	Arterial	North-South	4–6	Three lanes in each direction for most of Coffee Road and Gosford Road.
Oak Street/ Wible Road (south of Stockdale Highway)	Arterial	North-South	4–6	***Oak Street:*** Two lanes in each direction south of 24th Street, three lanes in each direction with right-turn lanes when approaching California Avenue. ***Wible Road:*** Two lanes in each direction.
Chester Avenue	Arterial	North-South	4	Two lanes in each direction for most of the route.
Union Avenue (State Route 204)	Arterial	North-South	6	Three lanes in each direction for most of the route.

Definitions of the Facility types:

Local County or City Roadways:
Arterials are roads used primarily for through traffic movements rather than access to adjacent land. Arterials are characterized by providing high vehicular capacity and continuity of movement. Traffic signals are used to control traffic movements at intersections of high volume cross streets and at driveways providing access to significant land uses such as major shopping centers. Speed limits are typically between 30 and 50 mph, depending on the density of use of the surrounding development. In school zones, speeds may be further reduced; likewise, in sparsely developed or rural areas, speeds may be increased. The width of arterial roads can range from two lanes to ten lanes or more. Some arterials are divided at the center with a paved median, while others share a common center lane, such as a center turning lane. Arterial roads are often referenced as “Major arterials” or “Minor Arterials” depending on the number of through traffic lanes and the importance of the roadway to the local circulation system.

Collector roadways are relatively short, and provide connections from local roads to arterial streets. Collector roads are typically two lanes wide and are not signalized, except at major intersections with arterial roadways.

Local roadways serve adjacent land uses, such as residential neighborhoods. They provide access to collector roadways, which in turn connect to the arterial street network.

State Highways:
Conventional: A highway without control of access which may or may not be divided. Grade separations at intersections or access control may be used when justified at spot locations.
Expressway: An arterial highway with at least partial control of access, which may or may not be divided or have grade separations at intersections.
Freeway: A divided arterial highway with full control of access and with grade separations at intersections.

Source: Developed from the *Traffic Study Report for the Centennial Corridor Project* 2012 and *Highway Design Manual* (Chapter 60, Nomenclature).

Existing Intersection Levels of Service

Efficiency of traffic operations on a transportation facility is measured in terms of level of service, with level of service A representing the best operating conditions and level of service F the worst. This is graphically shown in Figures 1-3a through 1-3d of Section 1.2, Purpose and Need.

Freeway operational performance was measured using computer software developed by the Federal Highway Administration. To determine freeway level of service, the number of passenger cars per lane over mile-long freeway segments was calculated using computer software and then compared to the criteria listed in Figure 1-3a. In addition, the intersections at the end of freeway interchange ramps were evaluated using the same computer software. The level of service criteria for intersections are shown graphically in Figures 1-3c and 1-3d in Section 1.2, Purpose and Need.

The Caltrans design standard for urban areas within Disctict 6 is level of service D, which means that Caltrans facilities are to be designed to operate at level of service D or better for 20 years from the date construction is completed (2038 for this project). Existing level of service on State Route 99 in the project area without the project is summarized in Table 1.2 in Section 1.2, Purpose and Need. State Route 58 east of State Route 99 is relatively uncongested under existing conditions, except for the eastbound segment approaching Union Avenue. The shared section of State Route 99 and State Route 58 between State Route 58 (East) and Rosedale Highway is more congested, with slower speeds and light congestion experienced at the interchanges. This is from traffic merging with freeway traffic at the on-ramps and traffic on the freeway changing lanes to get to the off-ramps. Locations on State Route 99 that are operating below level of service D are identified below.

State Route 99 Northbound. Most of the analysis locations operate at level of service D or better, except for the following locations that operate at level of service E:

- White Lane eastbound on-ramp during the morning peak hour
- White Lane westbound on-ramp during the morning peak hour
- State Route 58 off-ramp during the morning peak hour
- California Avenue off-ramp during the morning peak hour
- Rosedale Highway off-ramp during the morning peak hour

State Route 99 Southbound. Most of the analysis locations operate at level of service D or better, except for the following locations, which operate at level of service E:

- California Avenue off-ramp during the afternoon peak hour
- Ming Avenue off-ramp during the afternoon peak hour

The State Route 58 off-ramp from southbound State Route 99 operates at level of service F during the afternoon peak hour, as both the off-ramp volume and the mainline volume exceed their capacity in the two right lanes.

Level of service C is the design standard used for local intersections in metropolitan Bakersfield. The overall performance of the highway network was evaluated using a 2007 update of the Kern Council of Governments Regional Transportation Travel Forecasting Model. A total of 79 intersections of the street network were selected for study (see Figure 3-11, provided in Volume 2). Existing level of service for key intersections under study was summarized and presented in Table 1.1 of Section 1.2, Purpose and Need of this environmental document.

Traffic Accident Data

Caltrans maintains a traffic safety database called the Traffic Accident Surveillance and Analysis System. The database tabulates crash rates for all highways in California, identified by post miles. Data is reported based on the number of lanes, whether the crash occurred on wet or dry pavement, whether it occurred during the night or day, and whether the crash resulted in fatalities. Data collected between 2007 and 2010 indicates that fatal accidents for State Route 58 and State Route 99 in the project area are below the average for similar facilities in California, while “fatal plus injury” and “total accident” rates are higher than average.

Parking Facilities

Much of the Segment 1 study area is characterized by typical suburban residential neighborhoods, with on-street and off-street parking in residential areas and usually plentiful off-street surface parking in commercial lots. Parking conditions vary along the major arterials within the study area.

Park and ride lots are used to encourage carpooling. A park and ride lot with 49 parking spaces sits west of State Route 99, south of Stockdale Highway.

Public Transit Service

Public transit service in the metropolitan Bakersfield area is provided by the Golden Empire Transit District, Consolidated Transportation Service Agency, Kern Regional Transit Division, Amtrak, and Greyhound. Four transit centers lie in the study area: Downtown Transit Center, Southwest Transit Center, Bakersfield Greyhound Station, and Bakersfield Amtrak Station.

The Golden Empire Transit District serves an area of 60 square miles with a fleet of 81 buses and 19 GET-A-Lift buses. It provides bus service to about 24,000 riders each weekday, with more than 7 million boardings each year. (Note that a one-way trip may involve more than one boarding per trip due to the need to transfer between bus routes.)

In the project area, Golden Empire Transit District Routes 11 and 14 provide east-west service. Route 11 runs along Stockdale Highway, going between Stockdale Village (at California Avenue and Stockdale Highway) and California State University, Bakersfield. The route then runs south to Ming Avenue, providing east-west service to State Route 204 (Union Avenue), and then crosses the city via Union Avenue and various streets to an eastern end at Bakersfield College. Route 14

provides service between downtown and California State University, Bakersfield via Rosedale Highway.

The Kern Regional Transit Division provides transit services to unincorporated cities in Kern County. Some of the routes offer service between Bakersfield and the surrounding rural communities.

The alignment for the California High-Speed Train project through downtown Bakersfield crosses the eastern portion of the study area. This 800-mile (track length) rail line would serve as a transportation backbone for the state by connecting Los Angeles/Anaheim to San Francisco with trains that would reach speeds of 220 miles per hour. Initial construction is slated to begin with the Central Valley segment, with a goal of completing the San Francisco to Los Angeles segments by 2029.

Pedestrian and Bicycle Facilities

The main components of the pedestrian circulation system are sidewalks and crosswalks. Most developed properties in the Segment 1 study area are improved with sidewalks. While the city requires installation of sidewalks in conjunction with new development, some older study area streets within neighborhoods built before this requirement took effect do not have sidewalk improvements.

Kern County first adopted a bikeway plan in the mid-1970s. The plan called for bike lanes on various streets and dedicated bike paths on canal levees, along former railroad rights-of-way, and along the Kern River. In 1984, the Kern Council of Governments sponsored a bikeway study for the region, calling for more bike lanes on existing conventional streets and fewer bike paths along canals and abandoned railroad rights-of-way. The Kern Council of Governments recently updated its plan with a study called the *Kern Bicycle Plan and Complete Streets Recommendations*, December 2012, which identified a network of bicycle facilities that will provide improved access.

The *Metropolitan Bakersfield General Plan* contains a bikeway master plan that identifies existing and planned bikeways in Bakersfield:

- Near the project, the master plan designates a Class 1 (off-road) bike path along the Kern River.
- A Class 2 bike lane is a designated bike lane painted on the roadway. Class 2 bike lanes are shown along Stockdale Highway west of Oak Street; on Oak Street/Wible Road south of the Kern River; on Brimhall Road from Coffee Road to Heath Road; on Mohawk Street from Hageman Road to California Avenue; and on Allen Road, Calloway Drive, and Coffee Road from Snow Road to East Panama Road. The master plan identifies a future bikeway that would extend the Class 2 bike lane on H Street from Ming Avenue to Brundage Lane.
- A Class 3 bike route is an unpainted bike lane on the roadway (generally using wider shoulders). The master plan designates Class 3 bike routes on Brundage Lane between Oak Street and State Route 58 and Marella Way/New Stine

Road/Garnsey Lane/Real Road/Palm Avenue/4th Street/Virginia Avenue from California Avenue to State Route 58.

The Kern River Parkway within the project area consists of a variety of park facilities and several types of trails, including a paved bike trail, the Hoey Trail, and equestrian trails. The Kern River Parkway bike trail extends along the south side of the river. A long-term paved bike path detour was built at Mohawk Street in 2010 to allow the bike path to remain open while the Westside Parkway was being built.

Environmental Consequences

This analysis addresses the build alternatives and No-Build Alternative during the opening year (2018) and the 20-year design life (2038) of the project. The project analysis evaluates the changes in traffic patterns as a result of the Westside Parkway being incorporated into the State Highway System. The traffic conditions for the future years are also compared against the baseline 2008 conditions.

Results of the traffic study showed the build alternatives would provide better traffic flow for all vehicles including trucks, due to direct route continuity compared to both the existing condition and the No-Build Alternative in the future years. The improvements would result in the following circulation benefits:

- Improvements between Cottonwood Road and State Route 99 would provide auxiliary lanes and collector-distributor lanes (lanes separated from the freeway to accommodate the lane-changing associated with traffic getting on and off the freeway), which would improve traffic flow by separating traffic exiting the freeway from through traffic.
- State Route 58 would no longer be required to share an alignment with State Route 99. It would continue westerly and connect to the Westside Parkway. This would eliminate the 2-mile overlap where State Routes 58 and 99 merge and share a common north-south alignment, thereby removing traffic from State Route 99.
- By moving traffic onto the Westside Parkway, which is a freeway, the project would enable drivers to continue their trips without having to use a local roadway. This would also eliminate the need to stop at multiple signals and the San Joaquin Valley railroad crossing at Landco Drive.
- The Westside Parkway would connect to Stockdale Highway to provide a direct link to Interstate 5, eliminating the offset route that exists at State Route 43.

Later in this section is more detailed information on the operation of the freeways and intersections. The benefits are summarized here.

The additional capacity provided by the build alternatives compared to the No-Build Alternative would also help reduce congestion on adjacent local roadways because traffic is expected to shift to the freeway.

Because the benefits of the project would extend beyond State Route 58, the project was evaluated using the Surface Transportation Efficiency Analysis Model (STEAM) version 2.0, which quantifies the cost of congestion in dollars. The STEAM model assigns $10.83 as the cost for a person sitting in congestion for 1 hour. Below are the savings in travel time over the 20-year (2018–2038) study period for the build alternatives compared to the No-Build Alternative (note that the cost savings in travel time associated with the project would extend beyond the 20-year period studied and would actually increase in later years because of future increased congestion).

- Alternative A—$769 million
- Alternative B—$794 million
- Alternative C—$945 million

Detailed traffic analysis is provided in the sections that follow. Level of service analysis on freeways, ramps, and key intersections documents the benefits summarized above. Other issues addressed include safety benefits, the loss of parking, transit operations, and pedestrian and bicycle facilities.

Circulation Networks Assumptions Common to All Build Alternatives

Network Improvements

The 2038 circulation network used in the traffic analysis assumes implementation of transportation improvements listed in the *2011 Regional Transportation Improvement Plan* and the *Metropolitan Bakersfield Transportation Impact Fee* program. The improvements from each of these programs are assumed to be in place by 2038. The planned future construction of these improvements explains why there are locations that would operate at a better level of service in 2038 than the projected level of service for 2018.

Level of service is a ranking A through F rating, with A being best and F being worst. See Figures 1-3a through 1-3d in Chapter 1 for a comparison of the different levels of service.

Freeway Changes

Changes to existing freeway on-ramps along State Route 99 and existing State Route 58 are required as part of the project and would affect traffic conditions. Freeway access changes proposed for each build alternative and the closest alternative travel routes are discussed below and shown on the project plans provided in Appendix E in Volume 2:

- The southbound State Route 99 off-ramp with direct access to Stockdale Highway would be eliminated. Vehicles would exit at the California Avenue interchange, just to the north. California Avenue and Oak Street provide a direct connection with the Stockdale Highway corridor.

- The northbound State Route 99 exit and entrance access points to and from Wible Road would be eliminated. Vehicles would use either the California Avenue interchange to the north or the Ming Avenue interchange to the south, depending on the destination.
- Access from Real Road and the Stockdale Highway corridor to southbound State Route 99 would be eliminated. Real Road or Stine Road would provide access to southbound State Route 99 via the Ming Avenue interchange.

Alternative A

Freeway Changes

The following freeway changes would apply to Alternative A:

- The connection between westbound State Route 58 (East) to Real Road and the Stockdale Highway corridor would be eliminated. Drivers would have the option to use the H Street/Chester Avenue interchange. The next nearest intersection to the north would be Calloway Drive.
- The northbound State Route 99/Ming Avenue on-ramp would be reconfigured to allow traffic to access westbound State Route 58 (Centennial Corridor) or northbound State Route 99. Access to eastbound State Route 58 from the Ming Avenue interchange would be eliminated. Vehicles would instead use the H Street/Chester Avenue interchange.

Local Street Changes

With Alternative A of Segment 1, changes to the local street network would affect local circulation as well as pedestrian and bicycle access. In all cases, alternative access would be provided nearby. On the north side of the proposed State Route 58, the following existing through streets would either end or be converted to a cul-de-sac just north of the proposed right-of-way: Jones Street, Williamson Way, McDonald Way, and Business Park South.

On the south side of the proposed State Route 58, the following existing through streets would either end or be converted to a cul-de-sac just south of the project right-of-way: Jones Street, South Garnsey Avenue, Williamson Way, Frazier Avenue, Westwood Street, McDonald Way, Brite Street, South Oleander Avenue, and Houchin Road. South Garnsey Avenue, an existing cul-de-sac, would end farther south.

Alternative B

Freeway Changes

The following freeway changes would apply to Alternative B:

- The connection between westbound State Route 58 (East) to Real Road and the Stockdale Highway would be eliminated. Drivers would have the option to use the H Street/Chester Avenue interchange. The next nearest intersection to the north would be Mohawk Street.

- The northbound State Route 99/Ming Avenue on-ramp would be reconfigured to allow traffic to access westbound State Route 58 (Centennial Corridor) or northbound State Route 99. Access to eastbound State Route 58 from the Ming Avenue interchange would be eliminated. Vehicles would instead use the H Street/Chester Avenue interchange.

Local Street Changes

Alternative B of Segment 1 would also require changes to the local street network. On the north side of the proposed State Route 58, the following existing through streets would end just north of the proposed right-of-way: Kentfield Drive and Hillsborough Drive.

On the south side of the proposed State Route 58, the following existing through streets would either end or be converted to a cul-de-sac just south of the proposed right-of-way: Dunlap Street, Kentfield Drive, Kensington Avenue, Woodlake Drive, Montclair Street, Hillsborough Drive, and Charter Oaks Avenue. South Garnsey Avenue would end farther south to accommodate the proposed roadway right-of-way.

Seville Street would be extended north just past Laverne Avenue to serve existing properties. A frontage road connection between Mona Way and Belle Terrace would be established. Belle Terrace would form an overpass across State Route 99. The existing Wood Lane cul-de-sac would move slightly west. North-south through access would remain at Belle Terrace.

Alternative C

Freeway Changes

Access from westbound State Route 58 (East) to California Avenue via State Route 99 would be eliminated. Drivers would have the option to use the H Street/Chester Avenue interchange to access California Avenue to the north.

Local Street Changes

Alternative C would change the local street network. On the west side of State Route 99, the following existing streets would end at the future State Route 58 extension: Oakdale Drive, Bank Street and Alamo Street. A frontage road link between Mona Way and Belle Terrace Avenue would be established. The existing Belle Terrace Avenue bridge would be replaced with a new overpass across State Route 99. East-west through access would remain at Belle Terrace. Chester Avenue, an existing cul-de-sac on the west side of State Route 99 and a dead-end on the east side of State Route 99, would be shortened on both sides of the new facility.

On the south side of the State Route 58 extension (Centennial Corridor), Commerce Drive would be converted to a cul-de-sac just south of the project right-of-way. Commerce Drive currently ends in a cul-de-sac south of Truxtun Avenue. Commerce Drive would end farther south to accommodate the proposed road right-of-way, but neither circulation nor access would be affected.

No-Build Alternative

As part of the regional planning effort, numerous transportation improvements are assumed in the metropolitan Bakersfield area. These improvements are identified on the Regional Transportation Plan and in the Metropolitan Bakersfield Traffic Fee Impact Program. These improvements are not part of the Centennial Corridor project and would occur regardless of the approval of Centennial Corridor. Therefore, they are assumed as part of the future roadway network for all the alternatives, including the No-Build Alternative. The improvement projects that would have the greatest influence in the project study area involve upgrades to major thoroughfares, including Rosedale Highway (State Route 58), State Route 99, Oak Street, and State Route 204.

Circulation and Congestion

Common to All Build Alternatives

Circulation and congestion are analyzed using freeway segment analysis and intersection level of service analysis. Information in the following subsections comes from the *Traffic Study Report* for the project.

Effectiveness of Freeway Segment Analysis

The effectiveness of freeway segments along State Routes 58 and 99 in both directions in the traffic study area is analyzed in the *Traffic Study Report for the Centennial Corridor Project*. Table 3.13 summarizes the freeway segments that would operate at level of service E or F in the forecasted years 2018 and 2038, for the build alternatives and the No-Build Alternative.

As shown in the table, none of the freeway segments along State Routes 58 and 99 would operate at the unacceptable level of service E or F in 2018 with any of the build alternatives; up to four freeway segments along State Route 99 would operate at level of service E or F with the No-Build Alternative. By 2038, up to 16 freeway segments along State Routes 58 and 99 would operate at the unacceptable level of service E or F under the No-Build Alternative compared to four segments for Alternatives A and B and five segments for Alternative C.

Table 3.13 Results of Freeway Effectiveness Analysis for Freeway Mainlines Within the Study Area

Freeway Analyzed	Peak Hour	Number of Segments with Level of Service E or F							
		2018				2038			
		No-Build	A	B	C	No-Build	A	B	C
State Route 58 Eastbound	AM	0	0	0	0	0	0	0	0
	PM	0	0	0	0	0	0	0	0
State Route 58 Westbound	AM	0	0	0	0	0	0	0	0
	PM	0	0	0	0	2	0	0	0
State Route 99 Northbound	AM	1	0	0	0	5	1	1	2
	PM	1	0	0	0	3	0	0	0
State Route 99 Southbound	AM	0	0	0	0	0	0	0	0
	PM	2	0	0	0	6	3	3	3
Totals	--	4	0	0	0	16	4	4	5

Source: Developed from the *Traffic Study Report for the Centennial Corridor Project* 2012.

These projections showing future congestion reduction with the project would benefit all traffic, including truck traffic; as mentioned earlier, east-west truck volume is currently very high relative to other state highway facilities in Kern County.

Intersection Level of Service Analysis

A total of 79 roadway intersections were analyzed to evaluate traffic congestion conditions under the project alternatives for the existing (baseline) year (2008), opening year (2018), and horizon year (2038). Projected traffic conditions in future years are compared against the 2008 baseline condition. Table 3.14 lists the intersections that have or would have traffic operations at deficient levels of service for existing and future (2018 and 2038) years. Local intersections (i.e. city streets) are considered deficient at level of service D, E, or F. State highway or freeway intersections including ramp intersections are considered deficient at level of service E or F. This information is summarized in Table 3.15.

No-Build Alternative

With the No-Build Alternative, State Route 99, State Route 58, and State Route 178 are all predicted to have high daily traffic volumes. Traffic volumes on each freeway segment would increase. In terms of traffic operations, the roadway network would experience congestion along Rosedale Highway, 24th Street, Truxtun Avenue extension west of Oak Street, portions of Stockdale Highway, State Route 99, and portions of State Route 178, Coffee Road, Mohawk Street, and Union Avenue.

Table 3.14 Comparison of Intersections Operating at Deficient Levels of Service

	Intersection	Peak Hour	Existing Condition (2008)		Future Year Traffic Control	Forecasted 2018 Level of Service (Delay[1])				Forecasted 2038 Level of Service (Delay[1])			
			Traffic Control	Level of Service (Delay*)		No-Build	Alt. A	Alt. B	Alt. C	No-Build	Alt. A	Alt. B	Alt. C
1	Interstate 5 Southbound Ramps/Stockdale Highway	Morning	northbound/ southbound 2-way stop		northbound/ southbound 2-way stop								
		Afternoon								F (92)*	F (66)*	F (69)*	F (52)*
3	State Route 43/Rosedale Highway	Morning	4-way stop		4-way stop								
		Afternoon								F(77)	F(82)*	F (79)*	F (83)*
4	State Route 43/Stockdale Highway	Morning	4-way stop		4-way stop	F(46)*	F(53)	F(52)	F(54)	F(>150)*	F(>150)*	F(>150)*	F(>150)*
		Afternoon				F(66)*	F(86)	F(87)	F(82)	F(>150)*	F(>150)*	F(>150)*	F(>150)*
7	Stockdale Highway/Nord Road	Morning	Signal		Signal	D(40)	D(40)	D(39)	D(37)				
		Afternoon											
8	Stockdale Highway/Wegis Avenue	Morning	northbound/ southbound 2-way stop		northbound/ southbound 2-way stop					F(>150)*	F(>150)*	F(>150)*	F(>150)*
		Afternoon								F(>150)*	F(>150)*	F(>150)*	F(>150)*
13	Allen Road/Rosedale Highway	Morning	Signal	D(37)	Signal					D(41)	D(36)	D(38)	D(36)
		Afternoon		E(77)		D(43)	D(41)	D(40)	D(41)	D(47)	D(48)	D(48)	D(47)
18	Allen Road/Stockdale Highway	Morning	Signal	D(39)	Signal								
		Afternoon											
19	Calloway Drive/Rosedale Highway	Morning	Signal	E(69)	Signal	D(40)	D(47)	D(43)	D(52)	D(49)	E(53)	E(56)	D(54)
		Afternoon		F(91)		D(41)	D(40)	D(39)	D(39)	D(55)	E(59)	E(61)	E(62)
23	Calloway Drive/Stockdale Highway	Morning	Signal	D(36)	Signal	D(41)	D(48)	D(47)	D(43)	D(52)	D(43)	D(45)	D(44)
		Afternoon		D(39)						D(40)	D(37)	D(38)	D(36)
24	Coffee Road/Rosedale Highway	Morning	Signal	E(76)	Signal	E(69)	D(46)	D(45)	D(41)	F(82)	E(64)	E(67)	E(65)
		Afternoon		E(66)		F(88)	F(93)	F(109)	F(129)	F(93)	F(84)	F(136)	F(94)
25	Coffee Road/Westside Parkway Westbound Ramp/Brimhall Road	Morning	Signal	E(60)	Signal								
		Afternoon		E(73)						D(43)			
28	Coffee Road/Truxtun Avenue	Morning	Signal	E(67)	Signal								
		Afternoon		F(81)									

Table 3.14 Comparison of Intersections Operating at Deficient Levels of Service

	Intersection	Peak Hour	Existing Condition (2008)		Future Year Traffic Control	Forecasted 2018 Level of Service (Delay[1])				Forecasted 2038 Level of Service (Delay[1])			
			Traffic Control	Level of Service (Delay*)		No-Build	Alt. A	Alt. B	Alt. C	No-Build	Alt. A	Alt. B	Alt. C
29	Coffee Road/Stockdale Highway	Morning	Signal	F(112)	Signal	D(36)	D(38)	D(44)	D(38)	E(56)	E(65)	E(57)	E(65)
		Afternoon		F(90)		D(54)	D(53)	D(51)	D(50)	F(100)	F(93)	F(83)	F(104)
30	Mohawk Street/Rosedale Highway	Morning	No Signal[2]	F(63)	Signal	E(57)	D(50)	E(61)	E(69)	F(104)	E(65)	F(84)	E(77)
		Afternoon		F(53)		F(112)	F(87)	F(154)	F(139)	F(123)	F(107)	F(109)	F(106)
33	Mohawk Street/Truxtun Avenue	Morning	Signal		Signal								
		Afternoon		D(42)						E(60)			
34	Mohawk Street/California Avenue	Morning	Signal		Signal					F(106)	D(37)	D(41)	D(35)
		Afternoon				F(89)	E(62)	E(55)	E(56)	F(162)	E(65)	E(62)	F(82)
35	Stockdale Highway/California Avenue	Morning	Signal	E(56)	Signal	E(65)	D(40)	D(43)	D(43)	F(93)	D(42)	D(46)	D(43)
		Afternoon		F(82)		D(49)	E(59)	E(57)	E(62)	F(100)	E(74)	E(60)	E(64)
36	Airport Drive/State Route 204 Off-ramp	Morning	Signal	D(36)	Signal								
		Afternoon		D(43)									
38	Buck Owens Boulevard/Rio Mirada Drive	Morning	Signal	D(44)	Signal								
		Afternoon											
39	State Route 99 Northbound Ramps/Buck Owens Boulevard	Morning	Signal	D(39)	Signal	D(41)		D(38)	D(37)	D(38)	D(42)	D(45)	D(42)
		Afternoon		D(38)		D(44)	D(44)	D(43)	D(46)	D(46)	D(43)	D(42)	D(43)
42	Rosedale Highway/State Route 99 Northbound Ramps	Morning	Signal	D (51)	Signal								
		Afternoon		F(126)							D(43)	D(36)	D(38)
43	24th Street/Oak Street	Morning	Signal	F(89)	Signal								
		Afternoon		F(100)						D(38)	D(38)	D(39)	D(37)
44	Truxtun Avenue/Empire Drive	Morning	Signal		Signal								
		Afternoon								D(48)		D(52)	
45	Truxtun Avenue/Oak Street	Morning	Signal	D(43)	Signal	D(36)				E(62)	D(52)	D(53)	D(52)
		Afternoon		E(74)		D(53)	D(44)	D(46)	D(44)	E(74)	D(46)	D(45)	D(48)

Table 3.14 Comparison of Intersections Operating at Deficient Levels of Service

	Intersection	Peak Hour	Existing Condition (2008)		Future Year Traffic Control	Forecasted 2018 Level of Service (Delay[1])				Forecasted 2038 Level of Service (Delay[1])			
			Traffic Control	Level of Service (Delay*)		No-Build	Alt. A	Alt. B	Alt. C	No-Build	Alt. A	Alt. B	Alt. C
46	California Avenue/Chester Lane	Morning	Signal		Signal								
		Afternoon					D(54)	D(48)	D(52)		F(131)	F(124)	F(121)
47	California Avenue/State Route 99 Southbound Ramps	Morning	Signal		Signal						E(58)	E(60)	E(59)
		Afternoon				E(61)	E(66)	E(66)	E(62)	E(76)	F(90)	F(83)	F(83)
49	California Avenue/Oak Street	Morning	Signal	D(44)	Signal								
		Afternoon		E(79)		E(56)	D(41)	D(41)	D(40)	E(62)	E(59)	E(58)	E(58)
50	Stockdale Highway/Stine Road	Morning	No Signal	Not Available	Signal	D(40)				F(89)			
		Afternoon				E(76)	D(53)	D(48)	D(52)	F(>150)	F(90)	F(84)	F(81)
51	Stockdale Highway/Real Road	Morning	Signal	F(96)	Signal	E(59)	D(40)	D(42)	D(51)	D(48)	D(36)	D(43)	D(45)
		Afternoon		F(93)		E(58)	D(41)	D(39)	F(82)	F(94)	D(53)	D(51)	F(91)
53	Brundage Lane/Oak Street	Morning	Signal		Signal								
		Afternoon		D(39)		D(42)				D(40)			
56	Ming Avenue/New Stine Road	Morning	Signal	E(57)	Signal	D(47)		D(38)	D(37)	D(47)	D(42)	D(48)	D(45)
		Afternoon		E(80)		D(48)	D(37)	D(39)	D(40)	E(70)	D(44)	D(45)	E(55)
57	Ming Avenue/Real Road	Morning	Signal		Signal								
		Afternoon		E(61)						E(65)			
59	Ming Avenue/Wible Road	Morning	Signal	E(61)	Signal								
		Afternoon		E(68)									
60	Ming Avenue/ State Route 99 Northbound Ramps	Morning	Signal		Signal					D(36)			
		Afternoon		D(40)									
61	Ming Avenue/Castro Lane	Morning	Signal		Signal								
		Afternoon								D(39)	D(40)	D(37)	D(36)
62	White Lane/Wible Road	Morning	Signal	D(55)	Signal	E(56)	E(65)	E(61)	E(58)	F(83)	F(84)	E(78)	F(81)
		Afternoon		F(83)		E(77)	E(72)	E(73)	E(72)	F(132)	F(139)	F(137)	F(130)

Table 3.14 Comparison of Intersections Operating at Deficient Levels of Service

	Intersection	Peak Hour	Existing Condition (2008)		Future Year Traffic Control	Forecasted 2018 Level of Service (Delay[1])				Forecasted 2038 Level of Service (Delay[1])			
			Traffic Control	Level of Service (Delay*)		No-Build	Alt. A	Alt. B	Alt. C	No-Build	Alt. A	Alt. B	Alt. C
63	White Lane/State Route 99 Southbound Ramps	Morning	Signal		Signal								
		Afternoon		F(110)		F(96)	F(90)	F(81)	F(86)	F(97)	F(87)	F(89)	F(94)
65	White Lane/Hughes Lane	Morning	Signal	D(36)	Signal	D(36)	D(37)	D(39)	D(39)	D(37)	D(43)	D(41)	D(46)
		Afternoon		D(38)		D(45)	D(45)	D(44)	D(44)	--	D(48)	D(53)	D(50)
66	H Street/Brundage Lane	Morning	Signal		Signal								
		Afternoon		D(35)		D(39)	D(40)	D(51)		E(68)	D(54)	D(48)	
67	H Street/State Route 58 Westbound Ramp	Morning	Signal		Signal								
		Afternoon		E(56)		E(66)	D(45)	D(47)		E(64)	D(35)	D(36)	D(36)
69	H Street/Ming Avenue	Morning	Signal		Signal						D(35)	D(33)	D(37)
		Afternoon		D(35)		D(43)	D(41)	D(45)	D(43)	D(37)	D(42)	D(41)	D(41)
70	Chester Avenue/Brundage Lane	Morning	Signal		Signal								
		Afternoon					D(41)	D(46)	D(36)	E(68)	D(54)	D(48)	
73	Chester Avenue/Ming Avenue	Morning	Signal		Signal	D(39)	D(36)	D(38)	D(44)		D(36)	D(40)	D(40)
		Afternoon				D(37)	D(43)	D(43)	D(41)	D(48)	D(48)	D(53)	D(51)
74	Union Avenue/Brundage Lane	Morning	Signal	D(42)	Signal					D(47)	D(43)	D(46)	E(57)
		Afternoon		D(40)						D(43)	D(48)	D(49)	D(51)
75	Brundage Lane/ State Route 58 Westbound Ramps	Morning	Signal		Signal								
		Afternoon								D(41)	D(42)	D(43)	D(43)

1 Note: Only intersections operating at a deficient level of service are listed in the table. Cells with no values listed are operating at an acceptable level of service. Local intersections are considered deficient at level of service D, E, or F. Caltrans' intersections (ramp intersections) are considered deficient at level of service E or F. The number in parenthesis is the delay in seconds, rounded to a full number.

2 The Rosedale Highway/Mohawk Street intersection was signalized after 2008, which represents the baseline for the analysis in this environmental impact report/environmental impact statement.

* Level of service improves to an acceptable level with installation of a traffic signal.

Source: Developed from the *Traffic Study Report for the Centennial Corridor Project* 2012.

Table 3.15 Summary of Deficient Intersections

	Existing (2008)	No-Build 2018	Alternative A 2018	Alternative B 2018	Alternative C 2018	No-Build 2038	Alternative A 2038	Alternative B 2038	Alternative C 2038
Local Intersections Operating at:									
Level of Service D	9 morning 7 afternoon	9 morning 11 afternoon	10 morning 14 afternoon	10 morning 14 afternoon	10 morning 12 afternoon	7 morning 10 afternoon	11 morning 13 afternoon	11 morning 14 afternoon	11 morning 9 afternoon
Level of Service E	6 morning 7 afternoon	5 morning 4 afternoon	1 morning 3 afternoon	2 morning 3 afternoon	2 morning 3 afternoon	2 morning 7 afternoon	4 morning 4 afternoon	4 morning 4 afternoon	4 morning 4 afternoon
Level of Service F	4 morning 8 afternoon	1 morning 4 afternoon	1 morning 3 afternoon	1 morning 3 afternoon	1 morning 4 afternoon	8 morning 11 afternoon	3 morning 9 afternoon	3 morning 9 afternoon	3 morning 11 afternoon
Ramp Termini Operating at:									
Level of Service E	1 morning 2 afternoon	0 morning 2 afternoon	0 morning 1 afternoon	0 morning 1 afternoon	0 morning 1 afternoon	0 morning 2 afternoon	1 morning 0 afternoon	1 morning 0 afternoon	1 morning 0 afternoon
Level of Service F	0 morning 2 afternoon	0 morning 1 afternoon	0 morning 1 afternoon	0 morning 1 afternoon	0 morning 1 afternoon	0 morning 2 afternoon	0 morning 3 afternoon	0 morning 3 afternoon	0 morning 3 afternoon
Source: Developed from the *Traffic Study Report for the Centennial Corridor Project* 2012.									

Safety Benefits

Analysis of All Build Alternatives

The build alternatives would result in safety benefits associated with considerably less congestion on local streets and State Route 99, as discussed earlier.

As discussed in the Traffic Study Report, accident costs benefits were quantified using the STEAM model. In 2038, the build alternatives would result in an estimated savings of between $6.3 million and $8.9 million compared to the No-Build Alternative. Additionally, based on the University of Washington Report, "Why Can't We Be Friends: Reducing Conflicts Between Bicycles and Trucks", (December 7, 2012, Chapter 7) removing traffic, including trucks, from local streets would result in fewer potential vehicular hazards to bicyclists and pedestrians.

No-Build Alternative

The No-Build Alternative would not provide safety benefits because no improvements would be made. Accident types most frequently avoided by providing freeway improvements are rear-end collisions, sideswipe, and hit objects. Rear-end collisions are the most frequent type of accident avoided.

Parking Impacts

Analysis of All Build Alternatives

Based on preliminary design information, the assessment of parking impacts was made by determining the number of available parking spaces, the types of businesses being affected, and the total number of parking spaces that would remain after project implementation.

All alternatives would remove a 49-space Caltrans Park and Ride facility on Stockdale Highway between Real Road and State Route 99. But, each alternative provides for a replacement lot providing a minimum of 49 parking spaces. (Please see Figures 2-4a, 2-5a, and 2-6a, provided in Volume 2, for the locations of replacement park and ride facilities for Alternatives A through C, respectively.)

The build alternatives would all affect parking at the Kaiser Health Care Center, though replacement parking could be provided using land leftover on an adjacent parcel acquired for the project. The number of parking spaces affected varies by alternative, as shown in Table 3.16. Detailed information of the affected parcels is provided in Appendix G in Volume 2.

Table 3.16 Summary of Parking Impact

Build Alternative	Current Number of Parking Spaces	Affected Parking Spaces[1]	Parking Spaces Remaining After Construction	Net Loss of Parking Spaces
A	1,635	285	1,513	122
B	1,210	300	1,064	146
C	1,771	383	1,629	142

1. Includes temporary parking space losses during construction
Source: Developed from the *Community Impact Assessment* 2013.

No-Build Alternative

The No-Build Alternative would not require the removal of any parking spaces.

Public Transit Impacts

Common to All Build Alternatives

Implementation of the transportation improvements is expected to enhance transit service because they would improve east-west access across the city of Bakersfield, while at the same time reducing freeway and local street congestion. Improved access, connectivity, continuity, and reduced congestion with all build alternatives should result in more timely and reliable transit service in the project area. Also, transit agencies serving the metropolitan Bakersfield area would likely be able to offer new bus routing options using the project freeway corridor.

No Golden Empire Transit routes use streets proposed for permanent closure/change under the build alternatives; neither do they use any of the freeway ramps proposed for closure. Therefore, there would be no direct effects to transit service due to road changes or closures. There may be some localized, minor increases in traffic on collector and arterial streets that would receive diverted traffic during operation of the build alternatives, but these indirect impacts are not expected to be substantial and should not adversely affect transit.

Alternative A

Alternative A would provide the shortest, most direct east-west service to the west side of Bakersfield, but there are no exits as you travel west from downtown along this alternative alignment in the Segment 1 study area. So, destinations such as shopping centers on Stockdale Highway would not be directly accessible via this alternative.

Alternative B

With Alternative B, east-west travel time across the Segment 1 study area would be slightly longer than for Alternative A, given the greater length of this alternative alignment. Eastbound transit on this alternative route would be able to exit at Truxtun Avenue, providing direct access to the Health South Bakersfield Rehabilitation Hospital and nearby office parks.

Alternative C

With Alternative C, east-west travel time across the Segment 1 study area would be slightly longer than for Alternatives A and B, given that this alternative would provide the least direct route. Also, with Alternative C, the exit to and from Real Road and State Route 58 is maintained. The Real Road connection provides direct access to the Stockdale and California Street corridors, which is not provided in Alternatives A and B. This would provide better accessibility for both transit and other vehicles.

No-Build Alternative

As mentioned under the discussion of Circulation Network Assumptions, as part of the regional planning effort, many transportation improvements have been planned in the metropolitan Bakersfield area. These improvements, which are not part of the Centennial Corridor project are assumed as part of the future roadway network for all alternatives, including the No-Build Alternative. Several of these improvement projects involve upgrades to major thoroughfares, including Rosedale Highway (State Route 58), State Route 99, Oak Street, and State Route 204. Generally, these improvements should improve traffic under operational conditions which, in turn, could benefit transit service. However, overall level of service on the circulation network would be reduced compared to existing conditions and implementation of the build alternatives.

Impacts to Pedestrian and Bicycle Facilities

Overall, the project would be designed to retain existing pedestrian and bicycle travel ways to the extent feasible. Each of the Segment 1 build alternatives would be designed to provide for arterial and collector road connections across the facility. Specific impacts on pedestrian and bicycle travel by alternative are provided below.

Alternative A

The proposed closure of Frazier Avenue, McDonald Way, Jones Street, and Williamson Way would eliminate existing local access used by bicyclists and pedestrians. Because residential areas are on both sides of the freeway, the lack of pedestrian and bicycle connection, particularly at Stine Road, would increase neighborhood travel distances. The closing of Business Park South, which is north of Stockdale Highway and east of California Avenue, would slightly affect pedestrian and bicycle travel times to and from the adjacent residential neighborhood. However, bikeways designated on the Bikeway Master Plan would not be affected.

Alternative A would affect a bicycle trail and the Hoey Trail on the south side of the Kern River. On the north side of the Kern River, a portion of the equestrian trail would be relocated within the Kern River Parkway.

Alternative B

The proposed closure to through traffic of Montclair Street, Charter Oak Avenue, Woodlake Drive, Kensington Avenue, Hillsborough Drive, Kentfield Drive, and Williamson Way would eliminate travel ways used by bicyclists and pedestrians,

resulting in modified travel patterns in the same neighborhood. With this alternative, pedestrian and bicycle cross-freeway access would be limited to the two overcrossings. Permanent bicycle and pedestrian traffic crossings would be at La Mirada Drive, Marella Way, California Avenue, Stockdale Highway, Belle Terrace, Ming Avenue, Hughes Lane, and H Street.

The option of removing the La Mirada Drive overcrossing from Alternative B is also being considered. Caltrans and the City of Bakersfield will consider the benefits associated with minimizing impacts on the remaining neighborhood, costs, and internal circulation needs. Removal of the overcrossing would not substantially change access, which would be provided by the Marella Way overcrossing. Removal of the La Mirada Drive overcrossing would eliminate the need to displace 13 single-family homes on La Mirada Drive near Centennial Park and save about $2.5 million in construction costs. The option of adding a Ford Road undercrossing would maintain connection of Ford Road between Stine Road and McDonald Way. This is the design option that was raised during the public information meeting held on December 6, 2012 and will be evaluated during final design. The undercrossing would not require the acquisition of any additional property and would add about $5.5 million in construction cost.

The Class 3 bike route (an on-road, unstriped bike route) designated on the Bikeway Master Plan, which uses Montclair Street, would have to be changed. The route currently uses Garnsey Lane to Mira Loma Drive, to Montclair Street, to Marella Way. Under Alternative B, the route would have to be changed to continue along Mira Loma Drive to Marella Way. This would provide generally the same access to California Avenue, but would require a realignment of the route on the City of Bakersfield Bikeway Master Plan.

Alternative C

Because no local through street access would be eliminated, Alternative C would not directly affect pedestrian and bicycle networks.

No-Build Alternative

Because no local through street access would be eliminated, the No-Build Alternative would not directly affect pedestrian and bicycle networks.

Avoidance, Minimization, and/or Mitigation Measures

Mitigation measures are presented below for each of the adverse effects to traffic identified in this section. Standard conditions for impacts on traffic and circulation during construction are presented in Section 3.6, Construction Impacts.

Minimization and Mitigation Measures

T-1 Modifications could include parking lot design modifications, space management (such as parking area restriping), or identifying parking lot replacement options.

The following measure would apply if Alternative A were selected:

T-2 For Alternative A, Caltrans shall take into consideration the means to minimize both operational and construction impacts to existing and planned bike routes and trails potentially affected by the project construction, such as rerouting the trails prior to the initiation of construction activities.

The following measure would apply if Alternative B were selected:

T-3 During final design, Caltrans shall work with the City of Bakersfield to amend the Metropolitan Bakersfield General Plan, Bikeway Master Plan to reflect the modified Class 3 bicycle route affected by Alternative B and shall take into consideration the means to minimize both operational and construction impacts to existing and planned bike routes and trails potentially affected by the project construction, including the Kern River Parkway bike path and Hoey Trail. The Kern River Parkway bike path and Hoey Trail shall be relocated, where necessary, to ensure connectivity with the existing facility on both sides of the bridge. All pedestrian facilities shall be designed to meet or exceed requirements of the Americans with Disabilities Act and current safety standards. Access to the pedestrian, bicycle, and equestrian trails shall be maintained to the extent practicable during the construction period.

The following measure would apply if Alternative C were selected:

T-4 With Alternative C, replacement parking shall be created to compensate for the loss of parking at Saunders Park. Sufficient parking shall be provided to meet zoning code requirements for the park.

3.1.7 Visual/Aesthetics

This section addresses potential visual and aesthetic impacts associated with the alternatives of the project. Preparation of the visual analysis is consistent with methodologies established by Federal Highway Administration's Visual Impact Assessment for Highway Projects (1981). Viewpoint analysis was focused on Segment 1, which will be newly built as part of the Centennial Corridor project. However, there are also intersection improvements at the Stockdale Highway and State Route 43 (known locally as Enos Lane) intersection (Segment 3). These would include widening the intersection to provide turn lanes and adding traffic signal to control traffic movement. Stockdale Highway would be widened to add a dedicated left-turn lane and a shared through/right-turn lane in both directions. These improvements would be built at the same time as the Segment 1 improvements.

Regulatory Setting

The National Environmental Policy Act of 1969 as amended establishes that the federal government use all practicable means to ensure all Americans safe, healthful,

productive, and *aesthetically* (emphasis added) and culturally pleasing surroundings (42 U.S. Code 4331[b][2]). To further emphasize this point, the Federal Highway Administration in its implementation of National Environmental Policy Act (23 U.S. Code 109[h]) directs that final decisions on projects are to be made in the best overall public interest taking into account adverse environmental impacts, including among others, the destruction or disruption of aesthetic values.

The California Environmental Quality Act establishes that it is the policy of the state to take all action necessary to provide the people of the state "with…enjoyment of *aesthetic*, natural, scenic and historic environmental qualities" (California Public Resources Code Section 21001[b]).

Affected Environment

Information in this section is based on the analysis in the *Visual Impact Assessment* (September 2013) for the project.

The Centennial Corridor project area sits at the southern end of the San Joaquin Valley in west-central Kern County, which has relatively flat topography. The Kern River is an important visual and recreational corridor running through the project area. All of the project alternatives cross the river, so the river is readily visible from all the build alternatives.

Much of the regional landscape of the project area, except for the northwestern portion, consists of urbanized land uses. Existing views are typical of a developed urban setting with little topographic variation and limited middle-ground or background vistas. Some locations within the region allow for visual relief from the urban setting. These include parkland such as Centennial Park, Saunders Park, and the Kern River Parkway. No Scenic Highways are found in the project area. Figure 3-12 shows images of typical views in the project area.

Viewshed

A "viewshed" is the area normally visible from an observer's viewpoint; it is limited by the screening/obstruction effects of any vegetation or structures.

To describe the visual environment of the project area, the viewshed was divided into four geographic landscape units, described in Table 3.17. A landscape unit is an area with similar visual characteristics; it is often marked by changes in land uses or a physical characteristic such as crossing a river or entering a valley.

Table 3.17 Summary of Landscape Units

Landscape Unit	Description	
State Route 58	Image Types	Commercial, residential, industrial
	Viewer Groups	Motorists, residents, commercial employees
	Visual Resources	Residential neighborhoods and commercial properties
	Overall Visual Character	Established transportation facility; residential neighborhoods; commercial properties

Table 3.17 Summary of Landscape Units

Landscape Unit	Description	
State Route 99	Image Types	Commercial, residential, recreational, industrial
	Viewer Groups	Motorists, residents, commercial employees, recreational viewers
	Visual Resources	Residential neighborhoods and commercial properties; Saunders Park
	Overall Visual Character	Established transportation facility; residential neighborhoods; commercial properties; Saunders Park
Mixed-Land Use	Image Types	Commercial, residential, recreational, industrial
	Viewer Groups	Commercial employees, motorists, residents, recreational users
	Visual Resources	Strip mall commercial development with some larger buildings; Centennial Park; the Kern River; the Kern River Parkway and Bike Path
	Overall Visual Character	Dense, urbanized strip mall development; residential neighborhoods; parkland; the Kern River
Sparsely Developed/ Kern River	Image Types	Residential, recreational, industrial
	Viewer Groups	Residents, motorists, commercial employees, recreational users
	Visual Resources	Expansive undeveloped land; the Kern River; the Kern River Parkway and Bike Path; Lake Truxtun
	Overall Visual Character	Underdeveloped area, parkland, the Kern River
Source: Developed from the *Visual Impact Assessment* 2013.		

Thirteen key viewpoints along each alternative alignment of Segment 1 were identified to represent the visual character of each landscape unit. See Figure 3-13 (provided in Volume 2) for the landscape units and key viewpoint locations.

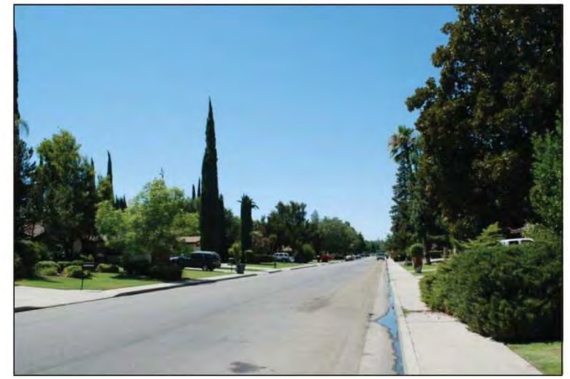
Each of the 13 viewpoints was analyzed to determine its visual quality in terms of *vividness* (how the views mix together to create patterns that stay in a person's memory); *intactness* (the consistency of the views of the natural and human-made landscape and amount of inconsistent views); and *unity* (how well the features blend to a visual design).

The seven evaluation criteria used to measure existing visual quality are: very low, low, moderately low, average, moderately high, high, and very high. Existing and simulated project viewpoints are shown in Figures 3-14 through 3-26. The environmental conditions in 2008, when the Notice of Preparation was issued and when the existing view photos were taken, serve as the baseline for the impact analysis evaluated for this project.

Viewer Groups

Viewer groups are groups of people that would see the project. Viewer groups for the Centennial Corridor project include drivers on the road, residents, and employees and customers of the commercial and office/light industrial uses along the route. Residents would be more sensitive to changes than would a driver passing through an area at 40 to 50 miles per hour.

Sparsely Developed/Industrial



Residential

Recreational

Commercial

Source: Visual Impact Assessment 2013

Representative Views within the Project Area

Centennial Corridor, Kern County, California

D6-KERN-58 - PM T31.7 to PM R55.6

D6-KERN-99 - PM 21.2 to PM 26.2

Project ID# 06-0000-0484

Caltrans

Figure 3-12

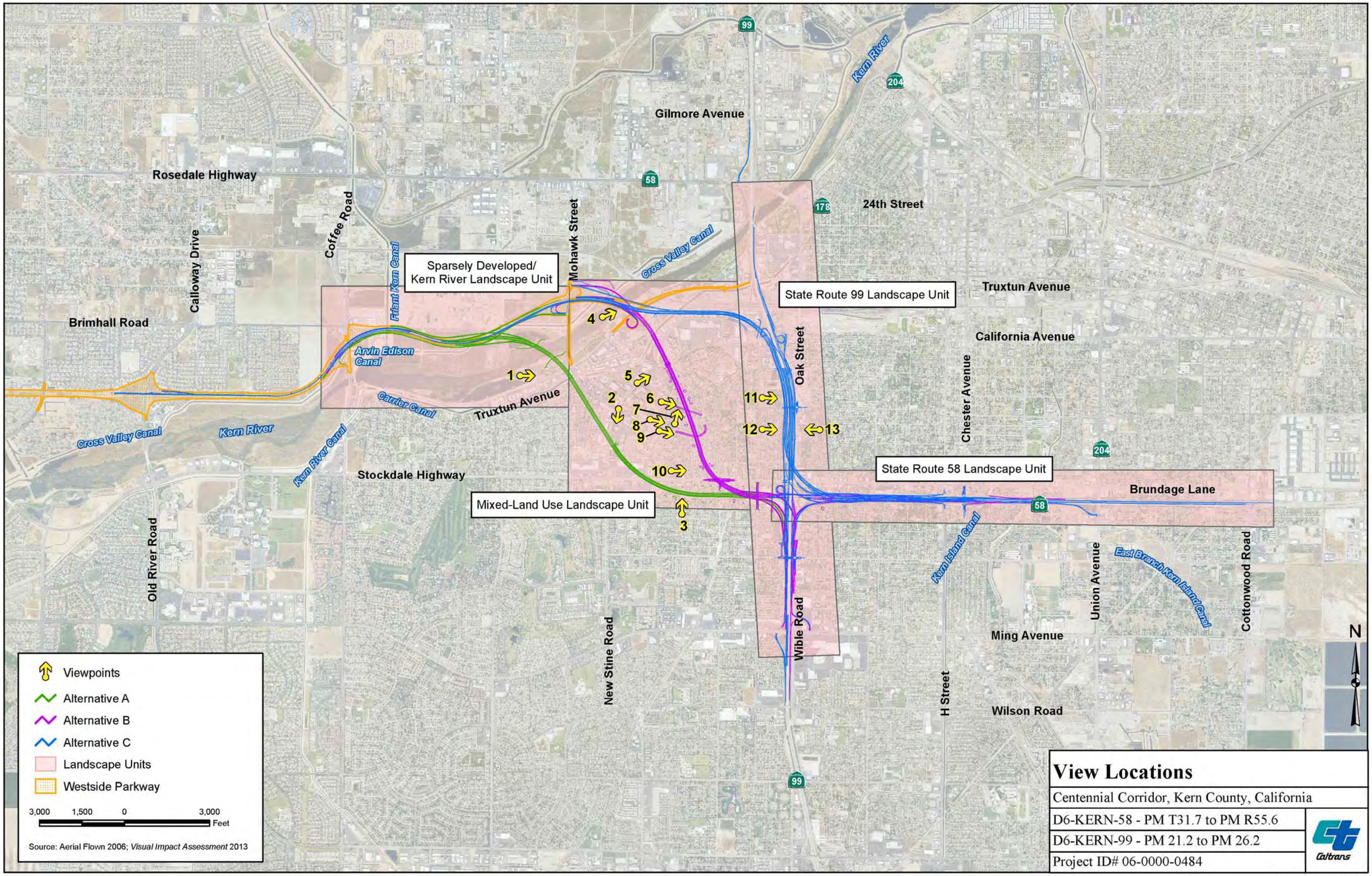

Gilmore Avenue
Rosedale Highway
24th Street
Coffee Road
Calloway Drive
Mohawk Street
Cross Valley Canal
Kern River
Sparsely Developed/
Kern River Landscape Unit
State Route 99 Landscape Unit
Truxtun Avenue
Brimhall Road
California Avenue
Arvin Edison Canal
Fitant Kern Canal
Carrier Canal
Oak Street
Chester Avenue
Kern River Canal
Stockdale Highway
State Route 58 Landscape Unit
Brundage Lane
Mixed-Land Use Landscape Unit
Old River Road
Kern Island Canal
East Branch Kern Island Canal
Union Avenue
Cottonwood Road
Ming Avenue
New Stine Road
Wible Road
H Street
Wilson Road
1
2
3
4
5
6
7
8
9
10
11
12
13
N
Viewpoints
Alternative A
Alternative B
Alternative C
Landscape Units
Westside Parkway
3,000 1,500 0 3,000
Feet
Source: Aerial Flown 2006; Visual Impact Assessment 2013
View Locations
Centennial Corridor, Kern County, California
D6-KERN-58 - PM T31.7 to PM R55.6
D6-KERN-99 - PM 21.2 to PM 26.2
Project ID# 06-0000-0484
Caltrans

Figure 3-13

Existing view (Baseline Condition 2008).

Simulated project view without vines.

Simulated project view with vines.

Source: Visual Impact Assessment 2013

Viewpoint 1 Kern River Parkway (looking east toward Alternative A Corridor Alignment)

Centennial Corridor, Kern County, California

D6-KERN-58 - PM T31.7 to PM R55.6

D6-KERN-99 - PM 21.2 to PM 26.2

Project ID# 06-0000-0484

Figure 3-14

Existing view (Baseline Condition 2008).

Simulated project view.

Viewpoint 2 California Avenue near Lennox Avenue (looking south toward Alternative A Corridor Alignment)

Centennial Corridor, Kern County, California

D6-KERN-58 - PM T31.7 to PM R55.6

D6-KERN-99 - PM 21.2 to PM 26.2

Project ID# 06-0000-0484

Source: Visual Impact Assessment 2013

Figure 3-15

Existing view (Baseline Condition 2008).

Simulated project view without vines.

Simulated project view with vines.

Source: Visual Impact Assessment 2013

Viewpoint 3 McDonald Way near Peckham Avenue (looking north toward Alternative A Corridor Alignment)

Centennial Corridor, Kern County, California

D6-KERN-58 - PM T31.7 to PM R55.6

D6-KERN-99 - PM 21.2 to PM 26.2

Project ID# 06-0000-0484

Figure 3-16

Baseline Condition 2008.

Existing View with Westside Parkway.

Simulated view with Westside Parkway and Centennial Corridor.

Source: Visual Impact Assessment 2013

Viewpoint 4 Kern River Parkway (looking northeast toward Alternative B Corridor Alignment)

Centennial Corridor, Kern County, California

D6-KERN-58 - PM T31.7 to PM R55.6

D6-KERN-99 - PM 21.2 to PM 26.2

Project ID# 06-0000-0484

Figure 3-17

Existing view (Baseline Condition 2008).

Simulated project view.

Viewpoint 5 California Avenue near Marella Way (looking northeast toward Alternative B Corridor Alignment)

Centennial Corridor, Kern County, California

D6-KERN-58 - PM T31.7 to PM R55.6

D6-KERN-99 - PM 21.2 to PM 26.2

Project ID# 06-0000-0484

Source: Visual Impact Assessment 2013

Figure 3-18

Existing view.

Simulated Project View, Option A

Simulated Project View, Option B

Source: Visual Impact Assessment 2013

Viewpoint 6 Centennial Park (looking east on Marella Way toward Alternative B Corridor Alignment)

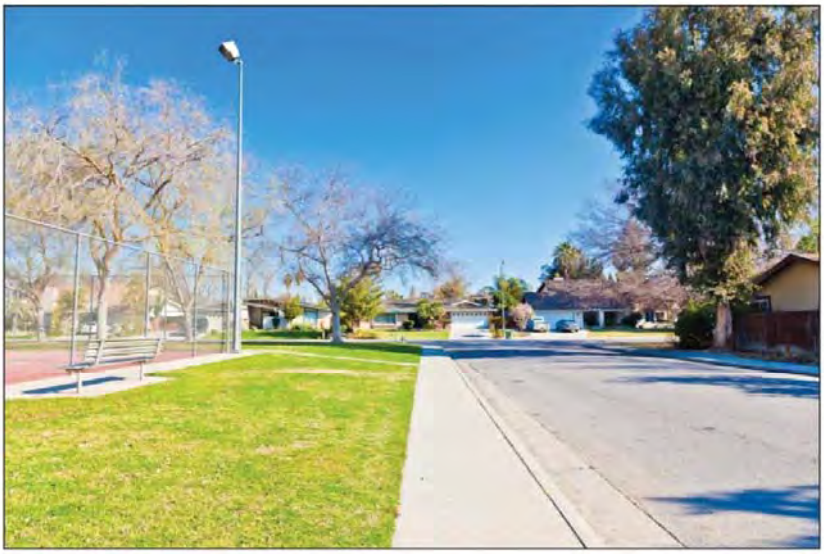
Centennial Corridor, Kern County, California

D6-KERN-58 - PM T31.7 to PM R55.6

D6-KERN-99 - PM 21.2 to PM 26.2

Project ID# 06-0000-0484

Figure 3-19



Existing view (Baseline Condition 2008).

Simulated project view.

Viewpoint 7 Centennial Park (looking north on Fallbrook Street toward Alternative B Corridor Alignment)

Centennial Corridor, Kern County, California

D6-KERN-58 - PM T31.7 to PM R55.6

D6-KERN-99 - PM 21.2 to PM 26.2

Project ID# 06-0000-0484

Source: Visual Impact Assessment 2013

Figure 3-20

Existing view (Baseline Condition 2008).

Simulated project view.

Viewpoint 8 Centennial Park (looking east toward Alternative B Corridor Alignment)

Centennial Corridor, Kern County, California

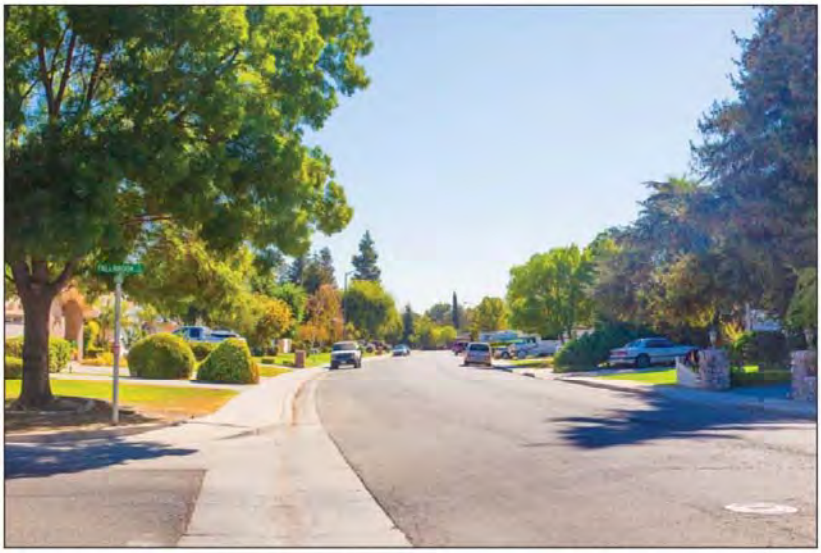
D6-KERN-58 - PM T31.7 to PM R55.6

D6-KERN-99 - PM 21.2 to PM 26.2

Project ID# 06-0000-0484

Source: Visual Impact Assessment 2013

Figure 3-21



Existing view (Baseline Condition 2008).

Simulated project view.

Viewpoint 9 La Mirada Drive at Fallbrook Street (looking east toward Alternative B Corridor Alignment)

Centennial Corridor, Kern County, California

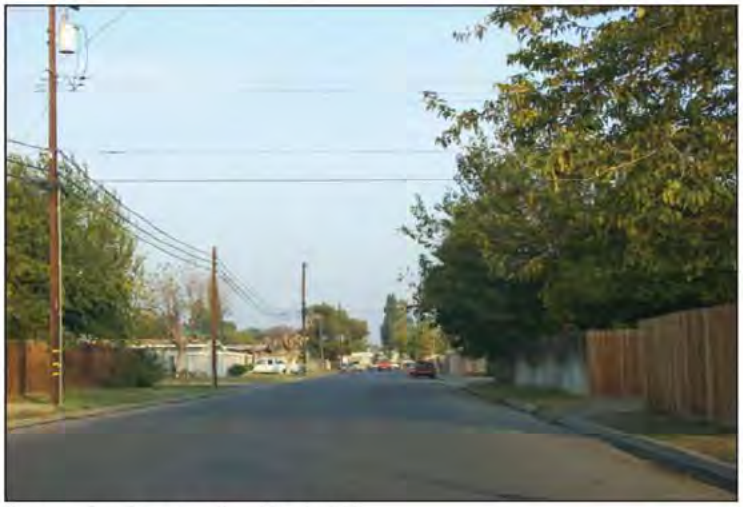
D6-KERN-58 - PM T31.7 to PM R55.6

D6-KERN-99 - PM 21.2 to PM 26.2

Project ID# 06-0000-0484

Source: Visual Impact Assessment 2013

Figure 3-22



Existing view (Baseline Condition 2008).

Simulated project view without vines.

Simulated project view with vines.

*Note: The option for adding a Ford Road undercrossing would maintain connection of Ford Road between Stine Road and McDonald Way. The bridge would not require the acquisition of any additional property.

Source: Visual Impact Assessment 2013

Viewpoint 10 Ford Avenue near Candy Street (looking east toward Alternative B Corridor Alignment)

Centennial Corridor, Kern County, California

D6-KERN-58 - PM T31.7 to PM R55.6

D6-KERN-99 - PM 21.2 to PM 26.2

Project ID# 06-0000-0484

Figure 3-23

Existing view (Baseline Condition 2008).

Simulated project view without vines.

Simulated project view with vines.

Source: Visual Impact Assessment 2013

Viewpoint 11 Saunders Park (looking east toward Alternative C Corridor Alignment)

Centennial Corridor, Kern County, California

D6-KERN-58 - PM T31.7 to PM R55.6

D6-KERN-99 - PM 21.2 to PM 26.2

Project ID# 06-0000-0484

Figure 3-24

Existing view (Baseline Condition 2008).

Simulated project view without vines.

Simulated project view with vines.

Source: Visual Impact Assessment 2013

Viewpoint 12 Bank Street near Wetherley Drive (looking east toward Alternative C Corridor Alignment)

Centennial Corridor, Kern County, California

D6-KERN-58 - PM T31.7 to PM R55.6

D6-KERN-99 - PM 21.2 to PM 26.2

Project ID# 06-0000-0484

Figure 3-25

Existing view (Baseline Condition 2008).

Simulated project view.

Viewpoint 13 Bank Street near Olive Street (looking west toward Alternative C Corridor Alignment)

Centennial Corridor, Kern County, California

D6-KERN-58 - PM T31.7 to PM R55.6

D6-KERN-99 - PM 21.2 to PM 26.2

Project ID# 06-0000-0484

Source: Visual Impact Assessment 2013

Figure 3-26

Environmental Consequences

The visual impact assessment analyzed changes at key viewpoints in the project study area. Photo simulations compared existing and post-project views. Table 3.18 shows existing and "with project" vividness, intactness, and unity ratings, plus overall visual ratings for the viewpoints.

Table 3.18 Summary of Existing Visual Quality for Viewpoints[1]

Viewpoint			Vividness	Intactness	Unity	Overall Visual Quality[2]
Alternative A						
Viewpoint 1	Kern River Parkway (looking east toward Alternative A)	**Existing**	Moderately High (5)	Moderately High (5)	Moderately High (5)	Moderately High (5)
		With Alternative A	Average (4)	Moderately Low (3)	Average (4)	Average (3.7)
Viewpoint 2	California Avenue near Lennox Avenue (looking south toward Alternative A)	**Existing**	Average (4)	Average (4)	Average (4)	Average (4)
		With Alternative A	Moderately Low (3)	Moderately Low (3)	Moderately Low (3)	Moderately Low (3)
Viewpoint 3	McDonald Way near Peckham Avenue (looking north toward Alternative A)	**Existing**	Average (4)	Average (4)	Average (4)	Average (4)
		With Alternative A	Moderately Low (3)	Moderately Low (3)	Moderately Low (3)	Moderately Low (3)
Alternative B						
Viewpoint 4	Kern River Parkway (looking northeast toward Alternative B)	**Existing**	Moderately High (5)	Average (4)	Average (4)	Average (4.3)
		With Alternative B	Average (4)	Moderately Low (3)	Moderately Low (3)	Moderately Low (3.3)
Viewpoint 5	California Avenue near Marella Way (looking northeast toward Alternative B)	**Existing**	Average (4)	Moderately High (5)	Average (4)	Average (4.3)
		With Alternative B	Moderately Low (3)	Average (4)	Moderately Low (3)	Moderately Low (3.3)
Viewpoint 6	Centennial Park (looking east on Marella Way toward Alternative B)	**Existing**	Average (4)	Moderately High (5)	Average (4)	Average (4.3)
		With Alternative B	Moderately Low (3)	Average (4)	Moderately Low (3)	Moderately Low (3.3)
Viewpoint 7	Centennial Park (looking north on Fallbrook Street toward Alternative B)	**Existing**	Average (4)	Moderately High (5)	Average (4)	Average (4.3)
		With Alternative B	Moderately Low (3)	Moderately Low (3)	Moderately Low (3)	Moderately Low (3)
Viewpoint 8	Centennial Park (looking east toward Alternative B)	**Existing**	Average (4)	Moderately High (5)	Average (4)	Average (4.3)
		With Alternative B	Average (4)	Average (4)	Average (4)	Average (4)
Viewpoint 9	La Mirada Drive at Fallbrook Street (looking east toward Alternative B)	**Existing**	Average (4)	Average (4)	Average (4)	Average (4)
		With Alternative B	Average (4)	Moderately Low (3)	Moderately Low (3)	Moderately Low (3.3)
Viewpoint 10	Ford Avenue near Candy Street (looking east toward Alternative B)	**Existing**	Average (4)	Average (4)	Average (4)	Average (4)
		With Alternative B	Moderately Low (3)	Moderately Low (3)	Moderately Low (3)	Moderately Low (3)

Table 3.18 Summary of Existing Visual Quality for Viewpoints[1]

Viewpoint			Vividness	Intactness	Unity	Overall Visual Quality[2]
Alternative C						
Viewpoint 11	Saunders Park (looking east toward Alternative C)	**Existing**	Average (4)	Moderately High (5)	Average (4)	Average (4.3)
		With Alternative C	Moderately Low (3)	Average (4)	Moderately Low (3)	Moderately Low (3.3)
Viewpoint 12	Bank Street near Wetherley Drive (looking east toward Alternative C)	**Existing**	Moderately Low (3)	Average (4)	Moderately Low (3)	Moderately Low (3.3)
		With Alternative C	Moderately Low (3)	Moderately Low (3)	Moderately Low (3)	Moderately Low (3)
Viewpoint 13	Bank Street near Olive Street (looking west toward Alternative C)	**Existing**	Average (4)	Average (4)	Average (4)	Average (4)
		With Alternative C	Average (4)	Average (4)	Average (4)	Average (4)

1 Seven evaluation criteria were applied to measure visual quality: very low, low, moderately low, average, moderately high, high, and very high (Federal Highway Administration 1981).

2 The score for the Overall Visual Quality was determined by adding the score for Vividness, Intactness, and Unity then dividing by three. This gave an average score for the three evaluation criteria.

Source: Developed from the *Visual Impact Assessment* 2013.

Common to All Build Alternatives

As noted in Section 2.1.1, the aesthetic treatment for walls, bridges, and landscaping of all build alternatives would be designed to be consistent with the Westside Parkway to provide a cohesive visual character to the project. Landscaping would be implemented upon completion of construction. Plant material would use native and adapted plant material consistent with Caltrans District 6 approved plant palette and would not include any invasive plant species. With the similar aesthetic treatment, no visual contrast along the corridor would be seen.

Alternative A

Three key viewpoints were analyzed for the Alternative A alignment:

Viewpoint 1 – Kern River Parkway (looking east toward Alternative A)

This viewpoint is in the Kern River Parkway near the intersection of Truxtun Avenue and the Mohawk Street extension. The natural topography and views of the Kern River Parkway and various tree types and foliage have a moderately high degree of overall visual quality (see Figure 3-14, Viewpoint 1 Kern River Parkway, looking east toward Alternative A).

Alternative A would build a new retaining wall and raised freeway north of Truxtun Avenue crossing Kern River Parkway (see simulated view in Figure 3-14). The addition of the retaining wall and raised freeway would affect the vividness, intactness, and unity of the existing view because the human-made structure would encroach on the natural landscape, resulting in a change in visual character of the Kern River Parkway. There would be a moderately high to high adverse change in the

visual quality/character of this viewpoint, decreasing the overall visual quality to an average rating.

The main viewer group for this viewpoint is Kern River Parkway users. The park users would see the views of the new freeway for a moderate duration and, therefore, would have a high sensitivity and awareness of the project and its effect on views. The view through the Kern River Parkway at this location would be interrupted by the new freeway. The viewer awareness of the changes is likely to be high.

The resulting visual impact to Viewpoint 1 would be moderately high and adverse with implementation of Alternative A.

Viewpoint 2 – California Avenue near Lennox Avenue (looking south toward Alternative A)
This viewpoint is near the intersection of California Avenue and Lennox Avenue in a busy commercial area. The streetscape is developed with commercial land uses, street furniture, and business signs. This viewpoint has an average degree of overall visual quality (see Figure 3-15, Viewpoint 2 California Avenue near Lennox Avenue, looking south toward Alternative A).

Alternative A would build a new overhead freeway north of Stockdale Highway crossing California Avenue. There would be concrete freeway decking and concrete columns supporting the new transportation facility (see simulated view in Figure 3-15). The proposed freeway would affect vividness, intactness, and unity of the existing view by introducing a new substantial above-grade structure into the commercial area as well as bisecting the commercial area. A visual change to Viewpoint 2 would be from average to moderately low.

The view from southbound California Avenue includes commercial development and prominent signage. The main viewer groups for this viewpoint include motorists and commercial area users. Motorists driving by this area would see the view at this location for a short time (about 1 to 5 seconds) and therefore, awareness to the changes of view is likely to be low. Awareness to the changes of view of the commercial employees is likely to be moderate or average because they would see the project only during business hours.

The resulting visual impact to Viewpoint 2 would be moderately low with implementation of Alternative A.

Viewpoint 3 – McDonald Way near Peckham Avenue (looking north toward Alternative A)
This viewpoint is near the intersection of McDonald Way and Peckham Avenue in a single-family residential neighborhood. The McDonald Way streetscape has residential homes, trees, and overhead utility lines and has an average degree of overall visual quality (see Figure 3-16, Viewpoint 3 McDonald Way near Peckham Avenue, looking north toward Alternative A).

Alternative A would build a cul-de-sac at the end of McDonald Way and Peckham Avenue, and a chain-link fence would be put up in front of a landscaped slope leading to a raised freeway and soundwall south of Stockdale Highway crossing McDonald Way (see simulated view in Figure 3-16). Many residential properties would be relocated to build the new freeway. The retaining wall, soundwall, and raised freeway would affect vividness, intactness, and unity of the existing view because the new freeway would add an above-grade structure into the residential area. The existing character of the area would change from a quiet residential street into a neighborhood bisected by a freeway. A moderate to high adverse change in the visual quality/character of this viewpoint would occur, resulting in a decrease in the visual quality from average to moderately low. The main viewer groups for this viewpoint include motorists and area residents. Motorists using northbound McDonald Way would see the foreground and middleground views of the new freeway for a short duration while driving by. Residents would see the scene of the new freeway for a longer period of time from their homes and the neighborhood and, therefore, would have a high sensitivity and awareness of the project and its effect on views. In addition, the project would affect the character of the residential landscape. Viewer awareness of the changes in neighborhood character would be high.

The resulting visual impact to Viewpoint 3 would be moderately high and adverse with implementation of Alternative A.

Alternative B

Seven key viewpoints were analyzed for the Alternative B Alignment:

Viewpoint 4 – Kern River Parkway (looking northeast toward Alternative B)

This viewpoint is in the Kern River Parkway north of the Truxtun Avenue and Commercial Way intersection. This area has flat, open space topography and views of the Kern River Parkway Bike Trail. Also seen are the relatively undeveloped land, fences, petroleum infrastructure, and overhead utility lines that have an average degree of overall visual quality (see Figure 3-17, Viewpoint 4 Kern River Parkway, looking northeast toward Alternative B). Figure 3-17 reflects not only 2008 baseline conditions, but also the recently constructed Westside Parkway because the visual character of this location has been substantially changed since the baseline conditions.

Alternative B would build an elevated freeway and ramps between the Kern River and Truxtun Avenue. The powerlines shown in this view would be removed. In addition, a portion of the Westside Parkway would be visible at this viewpoint. As shown in the simulated project view in Figure 3-17, the freeway decking and concrete columns of the Westside Parkway and support structures and a portion of the flyover connected with Segment 2 would be visible to the viewers.

An elevated freeway in the sparsely developed area would affect vividness, intactness, and unity of the existing view. The change in the visual quality/character of this viewpoint from a sparsely developed recreational area to one with an elevated freeway would reduce the visual quality from average to moderately low.

The main viewer group for this viewpoint is the Kern River Parkway users who would see the foreground to middle-ground views of the new freeway and ramps for a moderate time (more than 10 seconds at a time) and therefore would have a moderate to high sensitivity and awareness of the project and its effect on these views. The view of the Kern River Parkway Bike Path at this location would be interrupted by the new freeway. Viewer awareness of the changes is likely to be moderate/average to high because the project would slightly decrease the visual character of the key view. So, there would be average adverse changes to Viewpoint 4 with implementation of Alternative B.

Viewpoint 5 – California Avenue near Marella Way (looking northeast toward Alternative B)

This viewpoint is near the intersection of California Avenue and Marella Way. The urban streetscape and views of California Avenue and the various commercial land uses with tree canopy have an average degree of overall visual quality (see Figure 3-18, Viewpoint 5 California Avenue near Marella Way, looking northeast toward Alternative B).

Alternative B would build a new freeway northwest of Centennial Park crossing California Avenue. Concrete freeway decking and concrete columns would support the new freeway (see simulated project view in Figure 3-18). The elevated freeway would affect the vividness, intactness, and unity of the existing view because it would add a new substantial above-grade structure into the mostly commercial building area. There would be an adverse change in the visual quality/character of this viewpoint because the area would be bisected by the freeway. The visual quality of this viewpoint would change from average to moderately low with implementation of Alternative B.

The main viewer groups for this viewpoint include motorists and commercial area users. Motorists using eastbound California Avenue would see the foreground and middle-ground views of the new freeway for a short time while driving by. Commercial area users and employees would see the views of the new freeway for a longer time during business hours, but are likely to have a low sensitivity and awareness of the project because the project would only slightly affect the current highly developed urban character of the landscape. So, there would be moderately low adverse changes to Viewpoint 5 with implementation of Alternative B.

Viewpoint 6 – Centennial Park (looking east on Marella Way toward Alternative B) Corridor Alignment)

This viewpoint is in Centennial Park along Marella Way. The residential streetscape and views of the park's sidewalk, trees and distant tennis courts have an average degree of overall visual quality (see Figure 3-19, Viewpoint 6 Centennial Park, Existing View).

Alternative B would build a new overcrossing on Marella Way at Centennial Park, a retaining wall and concrete barrier with pipe rail along the top between the new

roadway and park, 6-foot sidewalks and street parking on both sides of the road, and street trees along the north side of the roadway.

The project offers two design options for the south side of the overcrossing. In Option A, a minor slope (about 12 inches) would provide a transition between the park property and the approach to the retaining wall/barrier. Most of the area in front of the wall would remain at its existing elevation and landscaped with turf grasses to blend into the adjacent park landscape. In Option B, a larger slope would be used within existing right-of-way, which reduces the height appearance of the retaining wall and shortens the length of the barrier needed along the sidewalk. The area in front of the wall would be landscaped with turf grasses to blend into the adjacent park landscape.

Residential properties contained within this viewpoint would be removed with the proposed project. In addition, a soundwall would be built at the back of the park near the tennis courts to shield Centennial Park users from the noise created by the proposed freeway. Until project design is complete, the soundwall is assumed to be 16 feet tall. The proposed freeway is not visible from this viewpoint because it is depressed below grade behind the soundwall in the background of this viewpoint.

The proposed overcrossing and removal of houses would be a substantial change in the visual environment of the neighborhood residential landscape surrounding Centennial Park. The change would affect the vividness, intactness, and unity of the existing view because the new freeway would change the visual character of the residential area; the existing character of the area would change from a quiet residential street into a bisection of the neighborhood by a large-scale transportation facility. In addition, the residential properties within this viewpoint would be removed with the proposed project. Therefore, there would be a high adverse change in the visual quality/character of this viewpoint, resulting in a moderately low visual quality with the implementation of Alternative B (see Figure 3-19, Viewpoint 6 Centennial Park, Simulated Project View, Option A and Option B).

Motorists using eastbound Marella Way would have short-term (less than 5 seconds) views of the proposed freeway (Alternative B) because Marella Way would be elevated over the freeway at this location. Residents would have longer duration (more than 10 seconds) foreground to middle-ground views of the new freeway and would have a high sensitivity and awareness of the project and its effect on views from their homes and neighborhood. Viewer awareness of the changes is likely to be high because duration of the view is long (more than 10 seconds) for community residents, and the proposed project would remove all residential properties contained within this viewpoint.

The resulting visual impact would be moderately high for Viewpoint 6 with implementation of Alternative B.

Viewpoint 7 – Centennial Park (looking north on Fallbrook Street toward Alternative B Corridor Alignment)
This viewpoint is in Centennial Park along Fallbrook Street. The grassy park area, tennis courts, sidewalk, and views of homes, trees, and lampposts have an average degree of overall visual quality (see Figure 3-20, Viewpoint 7 Centennial Park, Existing View).

Alternative B would build a new overcrossing on Marella Way and a cul de sac on Fallbrook Street. Until project design is complete, the soundwall is assumed to be 16 feet tall. The residential properties contained within this viewpoint would be removed with the proposed project. The proposed freeway is not visible from this viewpoint.

The proposed overcrossing, cul de sac, and removal of houses would be a substantial change in the visual environment of the neighborhood residential landscape surrounding Centennial Park. The change would affect the vividness, intactness, and unity of the existing view because the new transportation facilities would change the visual character of the residential area; the existing character of the area would change from a quiet residential street next to the park into a bisection of the neighborhood by a large-scale transportation facility. Therefore, there would be an adverse change in the visual quality/character of this viewpoint, resulting in a moderately low visual quality with the implementation of Alternative B (see Figure 3-20, Viewpoint 7 Centennial Park, Simulated Project View).

Motorists using Fallbrook Street would have long-term (more than 10 seconds) foreground and middle-ground views of the proposed project (Alternative B). Residents would have longer duration (more than 10 seconds) foreground to middle-ground views of the new freeway and would have a moderately high sensitivity and awareness of the project and its effect on views from their homes and neighborhood. Viewer awareness of the changes is likely to be high because duration of the view is long (more than 10 seconds) for community residents and motorists who would now need to turn around in the cul de sac, rather than continue on to Marella Way, and the proposed project would affect the character of the residential landscape.

The resulting visual impact would be moderately high for Viewpoint 7 with implementation of Alternative B.

Viewpoint 8 – Centennial Park (looking east toward Alternative B Corridor Alignment)
This viewpoint is in Centennial Park near the picnic area. Views of the grassy park and picnic area, mature trees and adjacent neighborhood have an average degree of overall visual quality (see Figure 3-21, Viewpoint 8 Centennial Park, Existing View).

Alternative B would build a soundwall, freeway, and cul de sac at Centennial Park. Except for two houses directly behind the picnic area, the residential properties within this viewpoint would be removed with the proposed project. The proposed freeway is not visible from this viewpoint because it is depressed below grade behind the soundwall in the background of this viewpoint.

The proposed soundwall, freeway, cul de sac, and removal of houses would be a substantial change in the visual environment of the neighborhood residential landscape surrounding Centennial Park. The change would affect the intactness and unity of the existing view because the new freeway would change the visual character of the residential area; the character would change from a quiet residential street to a neighborhood bisected by a large-scale transportation facility. Therefore, there would be an adverse change in the visual quality/character of this viewpoint, resulting in an average visual quality with the implementation of Alternative B (see Figure 3-21, Viewpoint 8 Centennial Park, Simulated Project View).

Motorists using Centennial Park would have long-term (more than 10 seconds) background views of the proposed freeway (Alternative B). Residents would have long duration (more than 10 seconds) background views of the new freeway and would have a high sensitivity and awareness of the project and its effect on views from their homes and neighborhood. Viewer awareness of the changes is likely to be high because duration of the view is long (more than 10 seconds) for community residents and motorists, and the proposed project would affect the character of the residential landscape.

The resulting visual impact would be moderately high for Viewpoint 8 with implementation of Alternative B.

Viewpoint 9 – La Mirada Drive at Fallbrook Street (looking east toward Alternative B Corridor Alignment)
This viewpoint is near the intersection of La Mirada Drive and Fallbrook Street. The residential streetscape and views of homes, trees, roadway and cars have an average degree of overall visual quality (see Figure 3-22, Viewpoint 9 La Mirada Drive at Fallbrook Street, Existing View).

Alternative B would build an overcrossing on La Mirada Drive at Fallbrook Street. Residential properties in the background of this viewpoint would be removed as a result of the proposed project; foreground and middle-ground homes would remain with their driveways elevated to meet the new overcrossing. The proposed freeway would be depressed under the overcrossing at this location. The option of removing the La Mirada Drive overcrossing from Alternative B is also being considered. Removal of the La Mirada Drive overcrossing would eliminate the need to displace 13 single-family homes on La Mirada Drive near Centennial Park. The visual analysis from this viewpoint is assuming the overcrossing because it represents the greatest visual change.

The proposed overcrossing and removal of residential properties would be a substantial change in the visual environment of the neighborhood residential landscape. The change would affect the intactness and unity of the existing view because the new freeway would change the visual character of the residential area; the character would change from a quiet residential street into a neighborhood bisected by a large-scale transportation facility. Therefore, there would be a high adverse change in the visual quality/character of this viewpoint, resulting in a

moderately low visual quality with the implementation of Alternative B (see Figure 3-22, Viewpoint 9 La Mirada Drive at Fallbrook Street, Simulated Project View).

Motorists using the proposed La Mirada overcrossing would have long-term (more than 10 seconds) foreground and middle-ground views of the proposed freeway and overcrossing (Alternative B). Residents would also have long duration (more than 10 seconds) foreground to middle-ground views of the new freeway and would have a high sensitivity and awareness of the project and its effect on views from their homes and neighborhood. Viewer awareness of the changes is likely to be high because duration of the view is long (more than 10 seconds) for community residents, and the proposed project would affect the character of the residential landscape.

The resulting visual impact would be moderately high for Viewpoint 9 with implementation of Alternative B.

Viewpoint 10 – Ford Avenue near Candy Street (looking east toward Alternative B)

In this viewpoint near the intersection of Ford Avenue and Candy Street, the residential streetscape and views of homes, trees, fences, and overhead utility lines have an average degree of overall visual quality (see Figure 3-23, Viewpoint 10 Ford Avenue near Candy Street, looking east toward Alternative B).

Alternative B would build a new soundwall and an elevated freeway behind these features near the Ford Avenue and Candy Street intersection (see Figure 3-23, Viewpoint 10 Ford Avenue near Candy Street, Simulated Project View). Many residential properties would be relocated to build the new freeway. The new structures would add a substantial change in the visual environment of the neighborhood residential landscape, affecting the vividness, intactness, and unity of the existing view and the visual character of the residential area from a quiet residential street to a neighborhood that is bisected. So, there would be an adverse change in the visual quality/character of this viewpoint, resulting in a moderately low visual quality.

The main viewer groups for this viewpoint include motorists and area residents. Motorists using eastbound Ford Avenue would see the foreground and middle-ground views of the new freeway for a short time while driving by. Residents would see the views of the new freeway from their homes and neighborhood for a much longer time and therefore would have a high sensitivity and awareness of the project. Residents' views down Ford Avenue would be interrupted by the freeway, no longer allowing them to look down the street at a neighbor's house. Overall, viewer awareness of the changes is likely to be high. So, the resulting visual impact would be moderately high for Viewpoint 6 with implementation of Alternative B.

Alternative C

Seven key viewpoints were analyzed for the Alternative C alignment:

Viewpoint 11 – Saunders Park (looking east toward Alternative C)

This viewpoint is in Saunders Park near the children's sand play area. The views of the play area, parking lot, park building, wall, trees, foliage, and overhead utility lines have an average degree of overall visual quality (see Figure 3-24, Viewpoint 11 Saunders Park, looking east toward Alternative C).

Alternative C would build a new raised freeway and soundwall parallel to the existing State Route 99 (see Figure 3-24, Viewpoint 11 Saunders Park, Simulated Project View). This would introduce a substantial change in the visual park landscape, affecting the vividness, intactness, and unity of the existing view. The visual character of Saunders Park would be affected from the removal of parkland and some mature trees, and addition of a new soundwall outside the parking lot perimeter. The visual quality at this viewpoint would therefore be adversely changed, from average to moderately low.

The main viewer group for this viewpoint is the Saunders Park users who would see the views of the new freeway and wall for a long duration. Viewer awareness of the changes at this location would be high. So, the resulting visual impact would be moderately high adverse changes to Viewpoint 11 with implementation of Alternative C.

Viewpoint 12 – Bank Street near Wetherley Drive (looking east toward Alternative C)

In this viewpoint near the intersection of Bank Street and Wetherley Drive on the west side of State Route 99, the residential streetscape views of overhead utility lines, trees, and a wall have a moderately low degree of overall visual quality (see Figure 3-25, Viewpoint 12 Bank Street near Wetherley Drive, looking east toward Alternative C).

Alternative C would build a chain-link fence in front of a landscaped slope leading to a soundwall and raised freeway next to and parallel to the existing State Route 99 (see Figure 3-25, Viewpoint 12 Bank Street near Wetherley Drive, Simulated Project View). Nearby residential properties would be relocated for project construction, affecting the intactness of this viewpoint. The change is not likely to affect vividness or unity because there is an existing wall next to the existing State Route 99 freeway. However, the overall visual quality/character of this viewpoint would remain moderately low with implementation of Alternative C.

The main viewer groups for this viewpoint include motorists and area residents. Motorists using eastbound Bank Street would see the views of the soundwall and raised freeway for a short time while driving by. Residents would see the project for a longer time and therefore would have a moderate sensitivity and awareness of the project and its effect on views from their homes and neighborhood. Viewer awareness

of the changes is likely to be at the moderate/average level. So, there would be average adverse changes to Viewpoint 12 with implementation of Alternative C.

Viewpoint 13 – Bank Street near Olive Street (looking west toward Alternative C)

In this viewpoint near the intersection of Bank Street and Olive Street, next to the east side of State Route 99, the streetscape is commercial, with a car lot on the left side of the viewpoint and trees and foliage. This viewpoint has an average degree of overall visual quality (see Figure 3-26, Viewpoint 13 Bank Street near Olive Street, looking west toward Alternative C).

Adjacent and parallel to the existing State Route 99 (see Figure 3-26, Viewpoint 13 Bank Street near Olive Street, Simulated Project View), Alternative C would build a short concrete barrier with a chain-link fence on top. Some mature trees may be removed, but would be replaced. The addition of the concrete barrier and chain-link fence would change the visual environment of the mixed commercial/residential area, but would not affect the vividness, intactness, and unity of the existing view because the character of this viewpoint would not substantially change. So, this viewpoint would remain at an average rating with the implementation of Alternative C.

The main viewer groups for this viewpoint include motorists and area residents. Motorists using westbound Bank Street would see the structure a short time while driving by. The view from westbound Bank Street is from within a mixed commercial/residential area. Community residents would see the project structure longer (more than 10 seconds) and therefore would have a moderate sensitivity and awareness of the project and its views from their homes and businesses. Viewer awareness of the changes is likely to be moderate/average. So, there would be average adverse changes to Viewpoint 13 with implementation of Alternative C.

The assessment results for all viewpoints are summarized in Table 3.19. Impacts to visual qualities and aesthetics of the area during construction are discussed in Section 3.6, Construction Impacts.

Table 3.19 Summary of the Visual Impact Assessment[1]

Viewpoint			Overall Visual Quality[2]	Viewer Response	Resulting Visual Impact[3]
Alternative A					
Viewpoint 1	Kern River Parkway (looking east toward Alternative A)	Existing Visual Quality	Moderately High (5)	High (6)	Moderately High (4.9)
		Visual Resource Change	Average (3.7)		
Viewpoint 2	California Avenue near Lennox Avenue (looking south toward Alternative A)	Existing Visual Quality	Average (4)	Moderately Low (3)	Moderately Low (3)
		Visual Resource Change	Moderately Low (3)		

Table 3.19 Summary of the Visual Impact Assessment[1]

Viewpoint			Overall Visual Quality[2]	Viewer Response	Resulting Visual Impact[3]
Viewpoint 3	McDonald Way near Peckham Avenue (looking north toward Alternative A)	Existing Visual Quality	Average (4)	High (6)	Moderately High (4.5)
		Visual Resource Change	Moderately Low (3)		
Alternative B					
Viewpoint 4	Kern River Parkway (looking northeast toward Alternative B)	Existing Visual Quality	Average (4.3)	Moderately High (5)	Average (4)
		Visual Resource Change	Moderately Low (3)		
Viewpoint 5	California Avenue near Marella Way (looking northeast toward Alternative B)	Existing Visual Quality	Average (4.3)	Low (2)	Moderately Low (2.7)
		Visual Resource Change	Moderately Low (3.3)		
Viewpoint 6	Centennial Park (looking east on Marella Way toward Alternative B)	Existing Visual Quality	Average (4.3)	High (6)	Moderately High (4.5)
		Visual Resource Change	Moderately Low (3)		
Viewpoint 7	Centennial Park (looking north on Fallbrook Street toward Alternative B)	Existing Visual Quality	Average (4.3)	High (6)	Moderately High (4.5)
		Visual Resource Change	Moderately Low (3)		
Viewpoint 8	Centennial Park (looking east toward Alternative B)	Existing Visual Quality	Average (4.3)	High (6)	Moderately High (5)
		Visual Resource Change	Average (4)		
Viewpoint 9	La Mirada Drive at Fallbrook Street (looking east toward Alternative B)	Existing Visual Quality	Average (4)	High (6)	Moderately High (4.7)
		Visual Resource Change	Moderately Low (3.3)		
Viewpoint 10	Ford Avenue near Candy Street (looking east toward Alternative B)	Existing Visual Quality	Average (4)	High (6)	Moderately High (4.5)
		Visual Resource Change	Moderately Low (3)		
Alternative C					
Viewpoint 11	Saunders Park (looking east toward Alternative C)	Existing Visual Quality	Average (4.3)	High (6)	Moderately High (4.7)
		Visual Resource Change	Moderately Low (3.3)		
Viewpoint 12	Bank Street near Wetherley Drive (looking east toward Alternative C)	Existing Visual Quality	Moderately Low (3.3)	Average (4)	Average (3.5)
		Visual Resource Change	Moderately Low (3)		

Table 3.19 Summary of the Visual Impact Assessment[1]

Viewpoint			Overall Visual Quality[2]	Viewer Response	Resulting Visual Impact[3]
Viewpoint 13	Bank Street near Olive Street (looking west toward Alternative C)	Existing Visual Quality	Average (4)	Average (4)	Average (4)
		Visual Resource Change	Average (4)		

1 Seven evaluation criteria were applied to measure visual quality: very low, low, moderately low, average, moderately high, high, and very high (Federal Highway Administration 1981).
2 Visual Resource Change summation taken from Table 3.18, Summary of Existing Visual Quality for Viewpoints.
3 Resulting Visual Impact = (Visual Resource Change of the Overall Visual Quality + Viewer Response) ÷ 2

Source: Developed from the *Visual Impact Assessment* 2013.

Segment 2 (Westside Parkway)/Segment 3 (Western Connection)

Analysis for Segment 2 (Westside Parkway) was done in the previous environmental document; the minor improvements to the Westside Parkway would not create additional visual impacts, so analysis for Segment 2 is not performed in this environmental document. In Segment 3 only minor improvements at the intersection of Stockdale Highway and State Route 43 are proposed. No substantial new elements (such as bridges or walls) are being introduced in Segment 3. No environmental impacts or substantial visual changes would occur with construction or operational impacts associated with Segment 2 or Segment 3.

No-Build Alternative

No environmental impacts would occur with the No-Build Alternative.

Avoidance, Minimization, and/or Mitigation Measures

As noted above, the aesthetic treatment for walls, bridges, and landscaping would be consistent with the design used for the Westside Parkway to provide a cohesive visual character to the project. Figures 3-14 through 3-26 (Simulated Project View) show the Westside Parkway treatments as they could look on the Centennial Corridor alternatives. Design features, such as depressing Alternative B between California Avenue and Ford Avenue, would minimize visual disruption of the roadway in the Westpark neighborhood.

Implementation of the following minimization measures would soften the addition of new transportation corridor infrastructure, reduce visual impacts, and improve visual appeal to the residential, open space, and commercial areas along the proposed project alternatives. These measures are also intended to reduce the visual impacts of the proposed project for community residents, commercial employees, recreation viewers, and motorists traveling along commercial corridors near the proposed project.

Minimization Measures

V-1 In conjunction with final design, Caltrans shall develop, and the contractor shall implement, an irrigation plan that includes the following requirements:

- All drip zones of isolated trees shall be protected with fencing. In addition, the existing environmentally sensitive areas (parks, Kern River) shall remain protected.
- An irrigation system shall be provided to all new plantings.
- An extended three-year maintenance period after the construction is completed shall be provided for single-source maintenance through the establishment period.

V-2 The overall Centennial Corridor aesthetic design theme shall be compatible with surrounding neighborhoods and in keeping with the overall Westside Parkway design theme, to the extent feasible, including landscaping, aesthetic soundwalls, bridge treatments, and lighting fixtures. The architectural treatments are shown in the visual simulations and are primarily comprised of brick. Additionally, the simulations contain views with and without vines for walls. The City of Bakersfield and the County of Kern shall enter into maintenance agreements with Caltrans. The maintenance agreement with the City will include maintenance of the enhanced aesthetic treatment, including graffiti removal. It should be noted that the City will have to provide the beige color paint to Caltrans for graffiti removal so that it is matched with the Westside Parkway architectural treatments. In the event the City cannot provide the beige color paint, Caltrans will have to use grey color paint to remove graffiti.

V-3 As part of storm water runoff management, the infiltration basins will be designed to include buffer areas and/or plant screens to shield public views where practical.

V-4 Landscaping would be implemented upon completion of construction. Plant material would consist of native, drought tolerant, and self-sustaining species. Any proposed plant material shall be consistent with the Caltrans District 6-approved plant palette and would not include any invasive plant species.

V-5 Caltrans shall preserve as many mature trees as practical. The landscape plan will incorporate a tree replacement plan with a replacement ratio of 1:1—for every one tree removed, a tree will be planted. Mature trees (larger than 20 feet high) that are to be removed shall be replaced using 20-inch box trees. A tree survey shall be completed during final design. Design plans shall indicate locations of existing specimen-sized trees (larger than 20 feet high) to be preserved if possible. Tree replacement shall meet all Caltrans and City standards and policies.

3.1.8 Cultural Resources

This section addresses potential impacts to archaeological and architectural resources that are historic properties and within the designated Area of Potential Effects. The Area of Potential Effects includes areas that may be directly or indirectly affected by construction of the project alternatives. An indirect impact occurs when the project could cause a change in character or use of historic properties, but would not directly encroach upon the property. Only those properties sitting within the Area of Potential Effects were included in the survey.

Regulatory Setting

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

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

On January 1, 2004, a Section 106 Programmatic Agreement between the Advisory Council, Federal Highway Administration, California State Historic Preservation Officer, and Caltrans went into effect for Caltrans projects, both state and local, with Federal Highway Administration involvement. In January 2014, the first amended Section 106 Programmatic Agreement went into effect. The Programmatic Agreement implements the Advisory Council's regulations, 36 CFR 800, streamlining the Section 106 process and delegating certain responsibilities to Caltrans. The Federal Highway Administration's responsibilities under the Programmatic Agreement have been assigned to Caltrans through the NEPA Assignment (23 USC 327) Memorandum of Agreement, which became effective October 1, 2012.

Historic properties may also be covered under Section 4(f) of the U.S. Department of Transportation Act, which regulates the "use" of land from historic properties. See Appendix B in Volume 2 for specific information about Section 4(f).

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

Affected Environment

The following documents were summarized in the Historic Property Survey Report (January 2013) and serve as the basis for the analysis in this section: *Archaeological Survey Report* (January 2013), *Extended Phase I Geoarchaeological Study* (November 2012), the *Historical Resources Evaluation Report* (January 2013), and California Historic Bridge Inventory sheet (October 2011). Information from the Finding of Effect on historic properties (March 2014) was also used.

Common to All Build Alternatives

Caltrans has determined that no bridges associated with the project are listed in or eligible for the National Register of Historic Places.

Built Environment Resources

The built environment within the Area of Potential Effects reflects the evolution of this portion of Bakersfield. Residential subdivisions, particularly mid-20th century subdivisions, are the predominant building type found within the project area in areas north and south of Stockdale Highway and west of State Route 99. Older residential parcels dating to the early 20th century, modern residential parcels, commercial buildings, canals, oil wells, bridges, and railroads are also found within the project area. Oil operations continue to extract crude oil nearest the Kern River.

The Secretary of the Interior sets standards for evaluating cultural resources for their potential eligibility to the National Register of Historic Places. For this study, cultural resources fewer than fifty years of age were evaluated to take into consideration their potential significance at the time construction begins, which may be several years beyond when the architectural history survey was conducted.

The 639 historic-era resources evaluated for this project reflect the major historical events discussed in the Historic Property Survey Report. The resources exist throughout the Centennial Corridor with most within the boundaries of the City of Bakersfield. All but one of the resources (the Kern Island Canal), date to the 20th century. About 10 percent were built in the 20th century before the end of World War II; the remaining were built after the end of World War II between 1946 and the mid-1960s.

Most of the buildings (about 95 percent) are modest residential properties built between the 1920s and 1960s. About 93 percent of the homes were built in one of three common styles: Minimal Traditional, Ranch, or Contemporary. Most of the houses in these three styles were built in subdivisions with homogenous architectural styles.

Cultural resources records were searched at the Southern San Joaquin Valley Information Center at California State University, Bakersfield in May and June 2007. An updated records search was done in August 2009. A survey of the area was done in the field to evaluate all buildings, structures, and objects found within the Area of Potential Effects. A total of 639 buildings or groups of buildings and structures required formal evaluations.

Four properties within the Area of Potential Effects were determined eligible for inclusion in the National Register of Historic Places: Friant-Kern Canal, the Lester H. Houchin residence, the Rancho Vista Historic District, and the property at 3904 Marsha Street (see Figure 3-27 for location of each historic property). These historic properties are described below. No remaining property formally evaluated for this project is eligible for the National Register of Historic Places or the California Register of Historical Resources.

Friant-Kern Canal

Friant-Kern Canal has been determined eligible for the National Register of Historic Places and is listed in the California Register of Historical Resources. As a key component of California's Central Valley Project, the canal has been determined eligible for listing in the National Register of Historic Places under Criterion A. It is historically significant at the state level under Criterion A within the context of development, construction, and operation of the Central Valley Project. The period of significance—1945 to 1951—is the canal's period of construction. Friant-Kern Canal is a 152-mile-long gravity-fed earth- and concrete-lined canal that ends at the Kern River northwest of Bakersfield. Character-defining features include its overall length, width, and its major contributing structures. The historic boundary of this property encompasses the canal and the contributing features that are attached to the canal.

All build alternative alignments would follow the recently built Westside Parkway that crosses the Friant-Kern Canal. Photo 1 shows a view of Friant-Kern Canal looking north toward the recently constructed Westside Parkway.

Photo 1. Friant-Kern Canal looking north toward the recently constructed Westside Parkway.

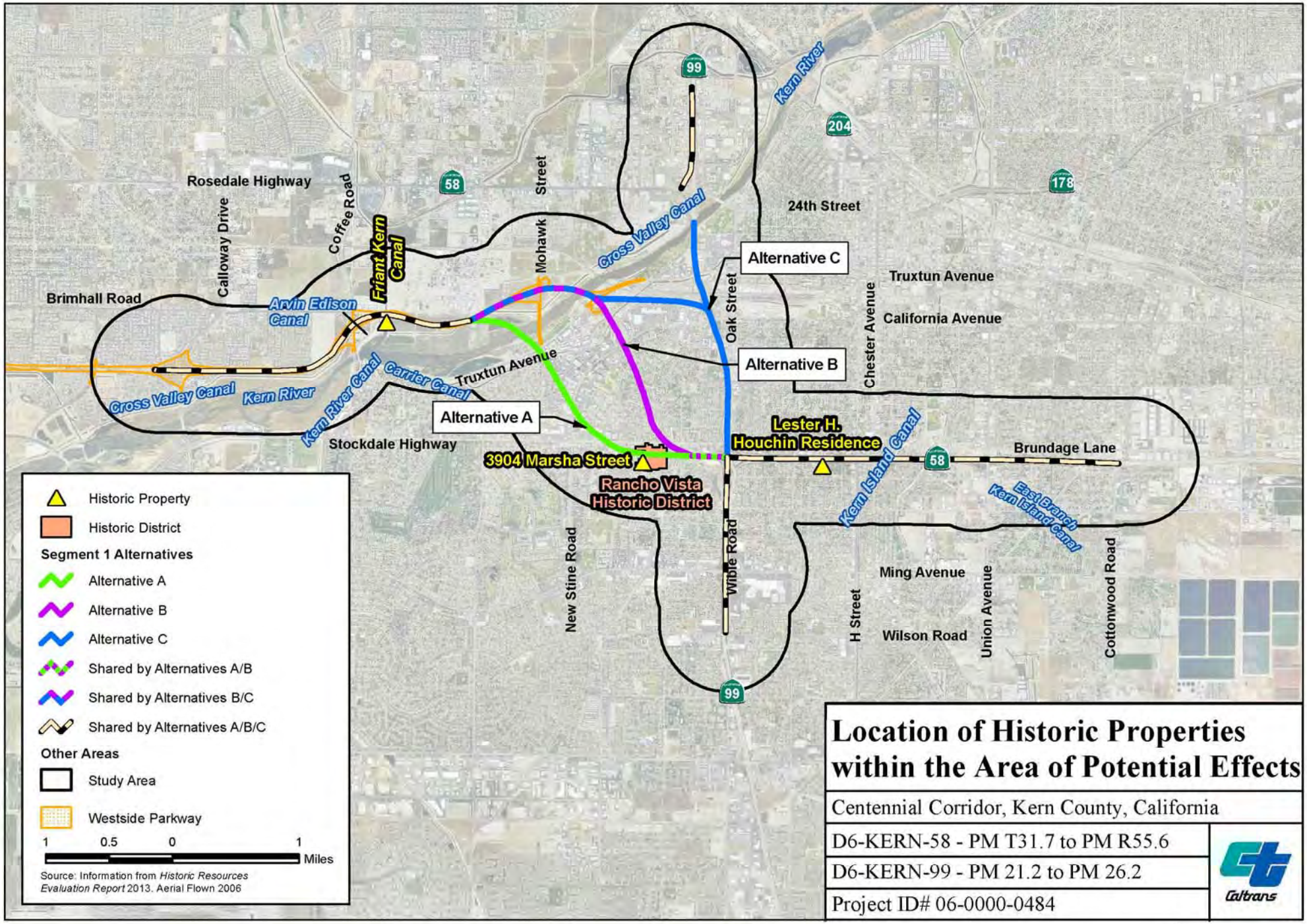

Rosedale Highway
Calloway Drive
Coffee Road
Friant Kern Canal
Mohawk Street
Brimhall Road
Arvin Edison Canal
Cross Valley Canal
Kern River
Kern River Canal
Carrier Canal
Truxtun Avenue
Stockdale Highway
Alternative A
Alternative B
Alternative C
Oak Street
24th Street
Chester Avenue
Truxtun Avenue
California Avenue
Lester H. Houchin Residence
3904 Marsha Street
Rancho Vista Historic District
Kern Island Canal
East Branch Kern Island Canal
Brundage Lane
New Stine Road
Wible Road
H Street
Ming Avenue
Wilson Road
Union Avenue
Cottonwood Road
99
58
204
178
Historic Property
Historic District
Segment 1 Alternatives
Alternative A
Alternative B
Alternative C
Shared by Alternatives A/B
Shared by Alternatives B/C
Shared by Alternatives A/B/C
Other Areas
Study Area
Westside Parkway
1 0.5 0 1 Miles
Source: Information from Historic Resources Evaluation Report 2013. Aerial Flown 2006
Location of Historic Properties within the Area of Potential Effects
Centennial Corridor, Kern County, California
D6-KERN-58 - PM T31.7 to PM R55.6
D6-KERN-99 - PM 21.2 to PM 26.2
Project ID# 06-0000-0484
Caltrans

Figure 3-27

Lester H. Houchin residence

The Lester H. Houchin residence and its detached garage at 307 South Oleander Avenue was determined eligible for listing in the National Register of Historic Places and the California Register of Historical Resources at the local level under Criterion C as an important local example of Colonial Revival architecture. The period of significance for this historic property is 1939. Contributing elements include the residence; the two-story garage; the circular driveway; and the landscaping on the north, south, and east sides of the residence and garage.

Photo 2 is a view of the Lester H. Houchin residence taken from Oleander Street looking north toward State Route 58 (depressed freeway).

Photo 2. Lester H. Houchin residence from Oleander Street looking north toward State Route 58

Rancho Vista Historic District

Rancho Vista Historic District is a residential subdivision determined to be eligible for the National Register of Historic Places under Criteria A and C. The tract is an unusual and important example of post-World War II efforts made to apply prefabrication techniques to tract housing. The general boundary of this historic property is defined by Stine Road to the east, Stockdale Highway to the north, McDonald Way to the west, and Quarter Avenue to the south. A more precise boundary, which excludes some non-contributing parcels that are part of the original tract development along perimeter streets, has been delineated as part of the Section 106 (National Historic Preservation Act) documentation prepared for the project. Rancho Vista Historic District is significant at the local level and has a period of significance between 1950 and 1957 when the residences in the area were built. Of the 113 properties that are within the Rancho Vista Historic District boundaries, 81 properties are considered contributors see Figure 12 of Volume 2, Appendix B). Character-defining features of this district include design characteristics of the tract (i.e., rounded concrete curbs; concrete sidewalks placed next to the curb with no

planting strip; houses set back from the curb at varying distances, and mature trees that were planted as part of the initial tract development) and design characteristics of the houses (i.e., small, one-story residences with compact plans, wood-frame construction on low concrete foundation; varied roof forms, including gable, hip and combination roofs; wood siding in a variety of types, applied both vertically and horizontally; and metal casement windows).

Photos 3a and 3b are a view of the east boundary of the Rancho Vista Historic District taken from Stine Road looking north toward the new freeway alignment (Alternatives A and B).

Photo 3a. East boundary of the Rancho Vista Historic District taken from Stine Road looking north toward the new freeway alignment (Alternatives A and B).

Photo 3b. Photo taken from about 4 houses north of Photo 3a looking north toward the new freeway alignment (Alternative B).

Photo 4 shows a view of the Rancho Vista Historic District taken on Jones Street south of Stockdale Highway looking northeast toward Alternative B Alignment. Alternative C is located further away and cannot be seen from any area within the Rancho Vista Historic District.

Photo 4. Rancho Vista Historic District taken from Jones Street south of Stockdale Highway looking northeast toward Alternative B Alignment

3904 Marsha Street Property

The property at 3904 Marsha Street, in addition to being a contributor to the Rancho Vista Historic District, was determined to be individually eligible for the National Register of Historic Places and is a historical resource under CEQA. The residence is significant under Criterion A at the local level for its association with the Cold War and civil defense measures designed for survival in the event of a nuclear war. The period of significance is between 1956 (when the residence was built) and 1962 (generally the end of the period of fallout shelter construction in the United States). The historic property boundary is defined by the legal parcel.

Photo 5 shows a view of the property at 3904 Marsha Street residence taken from Marsha Street looking north-northeast toward the new freeway alignment (Alternatives A and B). Alternative C is located further away and cannot be seen from this residence.

Photo 5. 3904 Marsha Street residence taken from Marsha Street looking north-northeast toward the new freeway alignment (Alternatives A and B).

Archaeological Resources

The archaeological project area includes all areas within the proposed right-of-way and a buffer of about 10 feet to allow for potential construction impacts. A larger area was surveyed as part of the analysis.

Three archaeological/historical resources records searches were done at the Southern San Joaquin Valley Information Center at California State University, Bakersfield; each covered different portions of the project area and a surrounding 0.5-mile radius: May to July 2007; July 15, 2009; and November 29, 2011. The searches found that few archaeological studies (8 total) that include portions of the archaeological survey area have been completed. Since much of the City of Bakersfield was developed before consideration of cultural resources, very few sites were recorded. Four cultural resources were recorded within half a mile of the archaeological project area. None of the known archaeological sites are within the survey area itself.

Consultation with the Native American Heritage Commission began in June 2007 as part of the Thomas Roads Improvement Program projects. This consultation involved requests for a search of the Sacred Lands File and a contact list of potentially interested Native American representatives. The Native American Heritage Commission responded by letter on June 21, 2007, and stated that the Sacred Lands File search does not show the presence of Native American cultural resources in the immediate project area. The Commission provided a contact list of 12 Native American groups and individuals who may have knowledge of Native American cultural resources not formally listed in any database. Those individuals were contacted, as was a second group of individuals identified as potentially interested but

not listed by the Native American Heritage Commission. Several responses were received as a result, and three requested additional information. On December 21, 2011, these three individuals were sent an updated informational letter describing the current Centennial Corridor Project. Results of the Native American consultation are provided in Section 5.3.3, Native American Consultation.

Archaeological field surveys were done April 13 through 15, 2009; October 26 and 27, 2011; and November 28 and 29, 2011. The surface of the archaeological survey area is covered mostly by asphalt, concrete, buildings, and other structures; only in a few cases—particularly near the Kern River—is there undeveloped land. No archaeological sites were found during the survey. The survey included all of Segment 1, those portions of Segment 2 where improvements are proposed as part of this project, as well as a portion of Segment 3 at the intersection of Stockdale Highway and State Route 43.

A sensitivity study for Segment 1 was done in the *Extended Phase I Geoarchaeological Study*. The study reviewed existing data and developed an archaeological sensitivity model for buried archaeological sites (a computer model based on soils and geologic maps and archaeological data to determine an area's archaeological sensitivity). This model was used to evaluate the archaeological sensitivity of each alternative. Further identification efforts are planned in sensitive areas of the preferred alternative (Alternative B).

Environmental Consequences

Architectural Built Environment Resources

Four properties within the Area of Potential Effects were determined eligible for the National Register of Historic Places: Friant-Kern Canal, Lester H. Houchin Residence, Rancho Vista Historic District, and the property at 3904 Marsha Street. On February 15, 2013, Caltrans initiated consultation with the State Historic Preservation Officer on these determinations and on April 15, 2013, she concurred. This correspondence is included in Appendix J, Volume 2. The Section 106 process is ongoing and further consultation with the State Historic Preservation Officer will be concluded prior to completion of the final environmental document. Should either Alternative A or B be selected, a Memorandum of Agreement will be signed that includes measures to mitigate the adverse effects to the Rancho Vista Historic District.

Section 4(f) of the Department of Transportation Act of 1966, states that "it is the policy of the United States Government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites." A discussion of Section 4(f) as it relates to the four historic properties under the three build alternatives is included below. More detailed information can be found in Appendix B, Section 4(f) Analysis, contained in Volume 2 of this environmental document.

Alternative A

Friant-Kern Canal

Alternative A alignment would follow the recently built Westside Parkway that crosses the Friant-Kern Canal. This alternative would require the construction of an additional bridge crossing Friant-Kern Canal for the eastbound Coffee Road on-ramp connector, in addition to the Westside Parkway. As proposed, this project feature will have no adverse effect on the historically significant canal. The architectural design of the new bridge will be similar in character to another recently constructed bridge structure (Westside Parkway project) over the Friant-Kern Canal, which the State Historic Preservation Officer concurred there was no adverse effect. While the Project would add a second bridge over the canal, in the context of it being a 152-mile long linear feature, there would be no direct or indirect adverse and no cumulative effect due to the length of the property. Further, the footings and abutments of the new bridge will be located outside of the National Register boundaries of the historic canal. The short bridge crossings over the canal do not diminish the historic character nor significant qualities that qualify the Friant-Kern Canal for National Register eligibility.

Photo 6 shows a simulated view of Friant-Kern Canal looking north toward the recently constructed Westside Parkway with Alternative A Alignment.

Photo 6. Simulated view of Friant-Kern Canal looking north toward the recently constructed Westside Parkway with Alternative A Alignment

Lester H. Houchin Residence

Alternative A alignment would follow the existing State Route 58 located approximately 56 feet from the northern edge of this historic property's boundary and about 150 feet from the elevation on the north side of the residence. Alternative A would not encroach into the Lester H. Houchin residential property boundaries, nor cause a change in the physical setting of the resource that would compromise the characteristics or features that qualify the resource for the National Register. Under this alternative a retaining wall and soundwall will be constructed near this historic property. The retaining wall would rise 25 feet from the base of the existing depressed freeway (State Route 58). The top of the retaining wall would be at the same level as Brite Street. The 8-foot-tall soundwall would be built atop the retaining wall along the north side of Brite Street. All proposed construction activities would be conducted within the state right-of-way; therefore, there would be no direct effects to this historic property. The soundwall, as well as construction activity, would be shielded by the existing mature and dense landscaping located along the north side of the property. No indirect adverse effects to this historic property would be expected from the introduction of new visual elements, which would be barely discernable. In addition, no adverse noise or vibration effects to this historic property would be expected.

Photo 7 shows the simulated view of the Lester H. Houchin residence from Oleander Street looking north toward State Route 58 where the new freeway alignment under all alternatives would follow.

Photo 7. Simulated view of Lester H. Houchin residence from Oleander Street looking north toward all build alternative alignments

Rancho Vista Historic District

Alternative A alignment would traverse the center of the Rancho Vista Historic District. Under Section 106, Alternative A would result in a direct adverse effect to this property by physically destroying or damaging its contributing elements and character-defining features. Direct impacts would result from the construction of an infiltration basin, an elevated roadway, and soundwalls within the Rancho Vista Historic District. The construction of an elevated freeway structure would also introduce a visual intrusion that would not be in keeping with the character and setting of the Rancho Vista Historic District. Photo 8 shows the simulated view of the Rancho Vista Historic District (taken from Stine Road near Peckham Avenue looking toward Alignment A). Alternative A would demolish more than half of the contributors (46 of the 81 residences). This would diminish the qualities that make the property eligible for the National Register, perhaps to such a degree that the historic property would lose its eligibility as it would no longer be able to convey its significant history due to a substantial loss of integrity. Alternative A would result in the use of a Section 4(f) historic property (as discussed above and in the *Section 4(f) Evaluation* provided in Appendix B in Volume 2).

Photo 8. Simulated view of Rancho Vista Historic District taken from Stine Road and Peckham Street looking north toward Alternative A Alignment

3904 Marsha Street Property

The residential property at 3904 Marsha Street is both a contributor to the Rancho Vista Historic District and is individually eligible for the National Register for a bomb shelter located in the rear of the property. The house and garage, both dating from 1956, and the circa 1960-62 underground shelter, are all character-defining features of the historic property, and are located approximately 180 feet south of the limits of construction and improvements which would be undertaken for Alternative A, and cannot be seen from the view shown in Photo 4 above. Therefore, under Section 106, there would be no adverse effect on the character-defining features of the property, which include the shelter entry hatch and ventilation pipe, neither of which is visible to anyone not standing in the rear yard. There would be no use under Section 4(f).

Alternative B

Friant-Kern Canal

Alternative B alignment would follow the recently built Westside Parkway that crosses the Friant-Kern Canal. Alternative B would not require new construction over the Friant-Kern Canal in addition to the Westside Parkway. No view would be changed from what is seen in Photo 1 above. Therefore, there would be no effect under Section 106 and no use of this Section 4(f) historic property.

Lester H. Houchin Residence

Similar to Alternative A, Alternative B alignment would follow the existing State Route 58 located approximately 56 feet from the northern edge of this historic property's boundary and about 150 feet from the elevation on the north side of the residence. The view looking toward Alignment B would be the same as that shown in Photo 7 above. Alternative B would not result in any adverse effect to the Lester H. Houchin residential property as discussed under Alternative A above.

Rancho Vista Historic District

Alternative B alignment would be located about 110 feet away from the nearest contributing residence within the Rancho Vista Historic District, with a proposed soundwall of approximately 12 to 16 feet in height, located approximately 70 feet from the closest edge of the historic property boundary. Although the elevated roadway structure at about 38 feet in height (with a soundwall atop it in places) could alter some views when looking north, east and northeast from street level from some sections of the Rancho Vista Historic District; the new infrastructure from most contributors would be relatively low on the horizon and be primarily visible to the north only from certain streets and to the northeast from the spatial gaps between the houses and when not otherwise obstructed by trees. Photo 9 shows the simulated view of the Rancho Vista Historic District (taken at Stine Road near Peckham Avenue looking toward Alignment B) and Photo 10 from Jones Street south of Stockdale Highway looking northeast toward Alternative B Alignment.

Photo 9. Simulated view of Rancho Vista Historic District taken from Stine Road about 4 houses north of Peckham Street looking north toward Alternative B Alignment

Photo 10. Simulated view of Rancho Vista Historic District taken from Jones Street south of Stockdale Highway looking northeast toward Alternative B Alignment

Rancho Vista Historic District is eligible for the National Register as a significant example of a planned postwar residential subdivision with houses built using innovative whole-house prefabrication techniques, and a setting of mature landscaping and houses setback from the curbs in a uniform manner. The integrity of location, design, materials, and workmanship would remain the same. The historic association and feeling of the historic property as a postwar residential housing tract from the perspective of most of its contributors would remain largely unchanged under Alternative B. In consultation with the State Historic Preservation Officer, Caltrans has determined that implementation of Alternative B would have an adverse effect on the Rancho Vista Historic District under Section 106 due to visual impacts associated with construction of an aerial structure with soundwalls that would be incompatible with the historic district.

In order to address the adverse effects on Rancho Vista Historic District, consideration is being given to a number of mitigation measures, including the incorporation of hardscape features, landscape, and architectural treatments that are compatible with the historic character of the Rancho Vista Historic District, such as color, texture, and vine treatment. Other mitigation measures under consideration include preparing detailed documentation on the historic district, including interpretation materials to be made available to the public. The specific mitigation to address effects on the historic district will be refined in detail in the Memorandum of Agreement prepared for the project after circulation of the Environmental Impact Report/Environmental Impact Statement.

Under Section 4(f), no land within the Rancho Vista Historic District will be permanently incorporated into the Project under Alternative B. Thus, there will be no direct use. Nor will there be any temporary occupancy of the historic district. While the introduction of an elevated structure and soundwalls would be out of scale with the historic setting and would have the effect of diminishing the overall integrity of the historic property, thereby constituting an adverse effect under Section 106, the Section 4(f) regulations limit “constructive use” to circumstances where a “project’s proximity impacts are so severe that the protected activities, features, or attributes that qualify the property for protection under Section 4(f) are substantially impaired [23 CFR 774.15]. The full *Section 4(f) Evaluation*, contained in Volume 2, Appendix B, examined the proximity impacts to Rancho Vista Historic District and concluded there would be no constructive use of the property.

3904 Marsha Street Property

The residential property at 3904 Marsha Street is located approximately 1,200 feet southwest of the limits of construction and improvements which would be undertaken for Alternative B, and cannot be seen from the view shown in Photo 5 above. Therefore, under Section 106, there would be no effect on the character-defining features of the property, which include the shelter entry hatch and ventilation pipe, neither of which is visible to anyone not standing in the rear yard. There would be no use under Section 4(f).

Alternative C

Friant-Kern Canal

Alternative C alignment would follow the recently built Westside Parkway that crosses the Friant-Kern Canal. Alternative C would not require new construction over the Friant-Kern Canal in addition to the Westside Parkway. No view would be changed from what is seen in Photo 1 above. Therefore, there would be no effect under Section 106 and no use of this Section 4(f) historic property.

Lester H. Houchin Residence

Similar to Alternative A, Alternative B alignment would follow the existing State Route 58 located approximately 56 feet from the northern edge of this historic property's boundary and about 150 feet from the elevation on the north side of the residence. The view looking toward Alignment B would be the same as that shown in Photo 7 above. Alternative B would not result in any adverse effect to the Lester H. Houchin residential property as discussed under Alternative A above.

Rancho Vista Historic District

Alternative C alignment is located about 1,300 feet west of the boundary of the Rancho Vista Historic District at its nearest point, so it would have no direct or indirect adverse effect on the Rancho Vista Historic District. The view of the Alternative C alignment cannot be seen from any contributors within the Rancho Vista Historic District. None of the qualities that qualify the property for eligibility will be diminished. Therefore, in addition, there would be no Section 4(f) use of the historic property under this alternative.

Property at 3904 Marsha Street

The residential property at 3904 Marsha Street is located over 2,300 feet southwest of the limits of construction and improvements which would be undertaken for Alternative C, and cannot be seen from the view shown in Photo 5 above. Therefore, under Section 106, there would be no effect on the character-defining features of the property, which include the shelter entry hatch and ventilation pipe, neither of which is visible to anyone not standing in the rear yard. There would be no use under Section 4(f).

No-Build Alternative

The No-Build Alternative would have no effect on architectural resources because no construction would occur. The No-Build Alternative would not use a Section 4(f) historic property.

Archaeological Resources

Common to All Build Alternatives

The records search indicated that four cultural resources were recorded within half a mile of the project area. None of the sites are within the Area of Potential Effects. No archaeological sites were identified during the field survey of the project area.

With use of the sensitivity model in the Extended Phase I Geoarchaeological study, areas of low potential, moderate potential, high potential, and very high potential were identified within the study area.

Areas of moderate potential for buried resources include soils mapped as urban land that have experienced extensive historical-period disturbance related to the building of roads and structures. Areas of high potential include areas that overlap in time with prehistoric occupation of the Bakersfield area.

Areas of very high potential are next to the abandoned channels identified in the 1952 aerial images and the modern channel of the Kern River.

As shown in Table 3.20, among the three alternatives, Alternative C crosses the highest number of acres with very high potential and high potential (a combined total of 354 acres) of discovering a buried archaeological site. Alternative B crosses the lowest number of acres of very high potential and high potential (a combined total of 321 total acres) and the highest number of acres of low potential (50 total acres). All three alternatives extend over areas of very high potential where buried sites (if present) are most likely to be found.

Table 3.20 Buried-Site Potential for Alternatives A, B, and C in Acres

Buried-Site Potential	Alternative		
	A	B	C
Very high	25	30	52
High	319	291	302
Moderate	154	133	175
Low	36	50	69
Source: Developed from the *Extended Phase I Geoarchaeological Study* November 2012.			

Given the sensitivity of portions of the project area, further identification efforts for archaeological resources will be done for the preferred alternative. Should archaeological resources be identified during the additional identification efforts in sensitive areas of the preferred alternative, every effort will be made to avoid these resources during construction. If the identified archaeological resources cannot be avoided, they will be evaluated for their eligibility for the National Register of Historic Places. If any of these archaeological resources are determined eligible for the National Register of Historic Places, appropriate mitigation measures will be implemented.

No-Build Alternative

The No-Build Alternative would have no effect on archaeological resources because no construction would occur.

Avoidance, Minimization, and/or Mitigation Measures

Avoidance measures have been incorporated into the current design concepts for each of the build alternative alignments near the Lester H. Houchin residence. Early design

concepts assumed embankments (slopes at the edge of the freeway) would have resulted in the State Route 58 right-of-way extending onto the property of the Houchin residence. To avoid impacts to this eligible property, a retaining wall and soundwall is proposed in this location to ensure the project does not affect this property. The retaining wall and soundwall would be at the edge of right-of-way north of Brite Street. This avoids direct impacts to the Houchin residence. In addition, it allows the landscaping on the north side of the property to be retained, which provides a visual buffer to Brite Street and State Route 58.

Construction methods would also be used to avoid and minimize potential indirect adverse effects to the Rancho Vista Historic District due to vibration resulting from construction activities near the homes. Alternative construction methods may include cast-in-drilled-hole piles rather than pile driving. Specific methods would be determined during final design.

Mitigation Measures

If either Alternative A or B is selected as the preferred alternative, a Memorandum of Agreement with the State Historic Preservation Officer and the Advisory Council on Historic Preservation would be required to identify mitigation measures to reduce potential impacts to the Rancho Vista Historic District. Measure CR-1 provides the type of measure that would be appropriate. The following measures would apply if either Alternative A or B is selected as the preferred alternative, except as noted:

CR-1 The conceptual mitigation measures for effects to the Rancho Vista Historic District would include as appropriate:

1. Detailed documentation of the Rancho Vista Historic District as a whole, and of each adversely affected contributing property at a level specified by the State Historic Preservation Officer (similar to Historic American Building Survey Level II documentation, consisting of large format archival quality photographs, available as-built plans, and written historical data in the form of an historical report), distribution to the appropriate Regional Information Center, local public library, and other repositories to be determined.
2. Preparation of a brochure on the local history and architecture of the affected Rancho Vista Historic District.
3. Adding information to existing social media sites dealing with related architectural topics.
4. Incorporation of hardscape features (including soundwalls), landscape, and architectural treatments that are compatible with the historic character of the affected Rancho Vista Historic District, such as color, texture, and vine treatment as feasible. (See Section 3.2.7, Noise, for location and heights of proposed soundwalls.)
5. Before demolition of contributing properties (this would only occur with implementation of Alternative A) for which an adverse effect

finding is made, strategies such as working with a local agency to identify appropriate sites or offering the properties for sale for $1 (or other reasonable amount) and paying up to the cost of demolition and removal of each contributing property would be attempted.

6. Architectural and structural elements or character-defining features would be made available for reuse in other buildings of the same age and style through an architectural salvage operation (this would only occur with implementation of Alternative A). No salvage would take place until an opportunity for the relocation described in item 5 above has taken place.
7. The Rancho Vista Historic District contributing buildings/structures affected by temporary construction easements would be protected by the establishment of Environmentally Sensitive Areas. After construction, the land, hardscape (e.g., residential walkways, garden walks/walls, etc.) and vegetation would be replaced in-kind per the Secretary of the Interior's *Standards for the Treatment for Historic Properties with Guidelines for Rehabilitation*.

CR-2 Contract specifications shall direct the contractor not to use pile driving for the construction of the bridge crossing at Stine Road and Stockdale Highway. The contractor shall use alternative construction methods (such as cast-in-drilled-hole piles) that would cause less than 0.12 inch per second peak particle velocity for the construction of the bridge to avoid any indirect adverse vibration effects to contributing elements of the Rancho Vista Historic District that is an Historic Property.

3.2 Physical Environment

3.2.1 Hydrology and Floodplain

Regulatory Setting

Executive Order 11988 (Floodplain Management) directs all federal agencies to refrain from conducting, supporting, or allowing actions in floodplains unless it is the only practicable alternative. Federal Highway Administration requirements for compliance are outlined in 23 CFR 650 Subpart A. To comply, the following must be analyzed:

- Practicability of alternatives to any longitudinal encroachments
- Risks of the action
- Impacts on natural and beneficial floodplain values
- Support of incompatible floodplain development
- Measures to minimize floodplain impacts and to preserve/restore any beneficial floodplain values affected by the project

The base floodplain is defined as "the area subject to flooding by the flood or tide having a 1 percent chance of being exceeded in any given year." This is also referred to as the "100-year storm event." An encroachment is defined as "an action within the limits of the base floodplain."

Affected Environment

Information in this section comes from the *Location Hydraulic Study* (November 2012) for the project. The discussion below primarily focuses on Segment 1 areas within the influence of the Kern River. Farther west, the Segment 3 study area is located outside the 100-year and 500-year floodplains.

The Kern River is the major water body in the project area, running for 165 miles and draining over 2,400 square miles of the southern Sierra Nevada Mountains. The river flows southwest into the San Joaquin Valley through the city of Bakersfield and empties into the normally dry Kern Lake. Property protection from river floods is provided by a system of levees, bridges, diversion structures, and canals. The Kern River is a designated floodway under jurisdiction of the Central Valley Flood Protection Board. Any encroachment on the floodplain would require permits from this agency. The Federal Highway Administration defines a "significant encroachment" as development that would involve one or more of the following construction or flood-related impacts: (1) significant potential for interruption or termination of a transportation facility that is needed for emergency vehicles or provides a community's only evacuation route; (2) a significant risk; or (3) a significant adverse impact on the natural and beneficial floodplain values.

The Kern River hydrologic and hydraulic conditions have been studied by the Federal Emergency Management Agency and potential flood hazard zones have been mapped. In the project area, the designated 100-year and 500-year floodplains of the river include the river channel and adjacent low-lying areas, as shown in Figure 3-28.

Figure 3-29 shows surface water bodies in the project area. Two groundwater recharge ponds (just north of Truxtun Avenue and south of the Kern River) are referred to as Truxtun Lakes. Various canals in the project area divert the Kern River water for use in agricultural irrigation and municipal water supplies: Arvin-Edison Canal, Friant-Kern Canal, Cross Valley Canal, Carrier Canal, Stine Canal, Central Branch Canal, and Kern Island Canal.

Natural and beneficial uses of the Kern River and adjacent floodplain include fish and wildlife foraging, migration, and breeding; flood flow conveyance and storage; groundwater recharge; and recreational activities. Even with surrounding urbanization, the Kern River and adjacent floodplain have moderate wildlife habitat values in the project area.

Environmental Consequences

This section discusses impacts to hydrology and floodplain within the project study area as a result of the proposed project alternatives. Construction impacts are provided in Section 3.6 of this environmental document.

Common to All Build Alternatives

The proposed drainage system for each build alternative would keep the existing drainage patterns and route the onsite runoff to existing and proposed infiltration basins through the onsite drainage system. Because all runoff would be retained within these basins, there would be no changes in offsite flow rate or quantity as a result of the project.

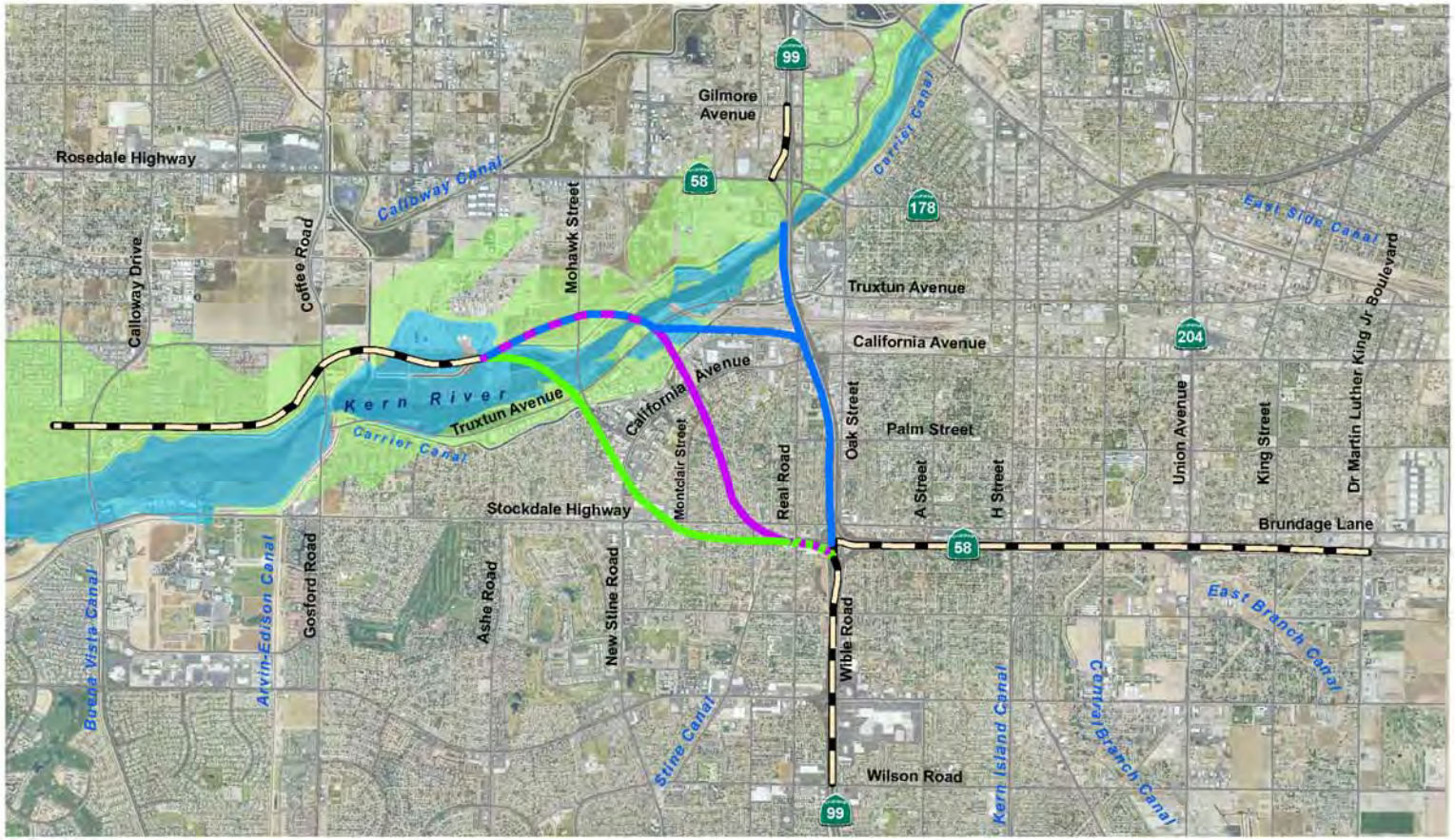
Direct runoff into the Kern River and canals would be avoided through roadway design and with infiltration basins located along each proposed alternative. Storm water on pavements would generally drain as surface flow to the outside edge of the freeway/roadway travel lanes, or toward the median. Storm drain inlets would then collect the storm water and direct it into infiltration basins. Several existing drainage facilities would be improved or rerouted to new infiltration/retention basins as a result of the project.

In accordance with Caltrans standards, the drainage facilities would handle runoff from a 25-year, 5-minute storm (i.e., a storm with a 4 percent probability of occurring in any given year, where water flows from the most remote point in a watershed to the watershed outlet in 5 minutes), and infiltration basins would accommodate runoff from two 10-year storms occurring within a 24-hour time period.

The three build alternatives would have abutments and piers within the 100-year floodplain of the Kern River. While each alternative bridge does encroach on the floodplain, impacts to the floodplain would not fit the definition of a significant encroachment. Each of these topics is discussed in text that follows.

Significant Potential for Interruption or Termination of a Transportation Facility—Road surfaces would be designed to be above the 100-year floodplain elevation, so vehicles using the freeway would not be exposed to flood hazards. The project would not affect emergency vehicle use of State Route 58 or its use as an evacuation route in the event of flooding.

A Significant Risk—Levees along the Kern River protect adjacent areas from flooding by providing at least 3 feet of freeboard (distance between the base flood level and the top of the levee) and an additional 1 foot of freeboard within 100 feet of structures, such as bridges. The increase in water level in the Kern River due to the bridges proposed under all build alternatives would not decrease the freeboard to less than the required minimum for the 100-year design flow. Levee freeboards would not be substantially affected under the build alternatives. The specific effects of each alternative are discussed below.



Not to Scale;
Source: Information from *Water Quality Assessment Report* 2012; Aerial flown 2006; Federal Emergency Management Agency 2010

N

Alternative A
Alternative B
Alternative C
Shared by Alternatives A/B
Shared by Alternatives B/C
Shared by Alternatives A/B/C
100 Year Floodplain
500 Year Floodplain

Floodplains

Centennial Corridor, Kern County, California

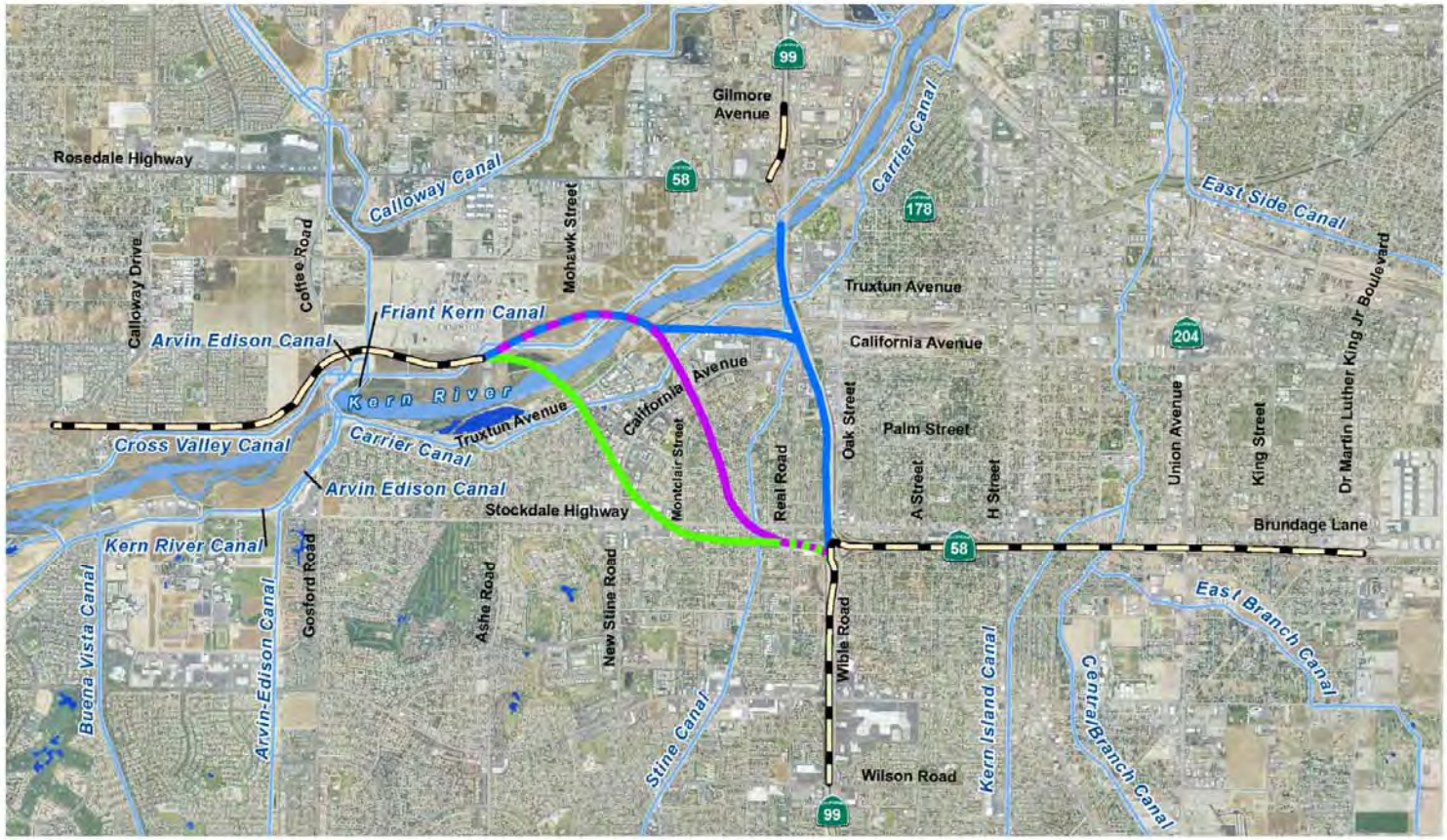
D6-KERN-58 - PM T31.7 to PM R55.6

D6-KERN-99 - PM 21.2 to PM 26.2

Project ID# 06-0000-0484

Caltrans

Figure 3-28



Not to Scale; Source: Information from *Water Quality Assessment Report* 2012; Aerial flown 2006; Kern County 2011

Segment 1 Alternatives

- Alternative A
- Alternative B
- Alternative C
- Shared by Alternatives A/B
- Shared by Alternatives B/C
- Shared by Alternatives A/B/C

Water Features

- Canals
- Rivers
- Lakes

Surface Water Bodies

Centennial Corridor, Kern County, California

D6-KERN-58 - PM T31.7 to PM R55.6

D6-KERN-99 - PM 21.2 to PM 26.2

Project ID# 06-0000-0484

Caltrans

Figure 3-29

Since bridge abutments and piers would be built within the Kern River floodplain, there would be a small decrease in storage capacity of the floodplain. The decrease in storage capacity due to the increase in impervious surface area would be minor compared to the size of the Kern River watershed. With conveyance of increased runoff to infiltration basins instead of the river, risks to the river's floodplain due to the added impervious surfaces would be eliminated. Given these consideration, impacts would be minimal and would not result in a significant risk.

Significant Adverse Impact on the Natural and Beneficial Floodplain Values—Even with surrounding urbanization, the Kern River channel and adjacent floodplain have moderate wildlife habitat values. Given the minimal effects on groundwater recharge and the expected minimal loss of habitat (see Section 3.3), the project would not adversely affect the beneficial uses of the floodplain.

Significant Potential for Support of Probable Incompatible Floodplain Development—The three build alternatives would not support incompatible floodplain development because no new permanent access to the Kern River floodplain would be created by the bridges and structures proposed.

Neither the minor improvements to nor the designation of the Westside Parkway as State Route 58 (Segment 2 of the Centennial Corridor project) would have an effect on local hydrology or existing flood hazards.

Alternative A

An 855-foot-long bridge would be built over the Kern River west of Mohawk Street, along with the replacement of the existing bridge over the Friant-Kern Canal. Based on the hydraulic analysis, bridge supports to be built in or near the Kern River would increase water surface elevation, without encroaching on mandated freeboard of the river's levees. Alternative A would raise the 100-year water surface level in the river by no more than 0.46 foot (5.5 inches). The change is reduced to zero about 3,600 feet upstream of the proposed bridge. The calculated increase in water level in the river would be less than 1 foot, and the increase in water level in the Kern River due to the bridges proposed would not decrease the levee freeboard below the required minimum for the 100-year design flow. The impact from the water level rising less than 6 inches in the Kern River channel would not cause an adverse impact to flood flow at this location.

Alternative B

A 941-foot-long bridge connecting westbound State Route 58 to Mohawk Street and a 677-foot-long mainline bridge would be built over the Kern River. Based on the hydraulic analysis, bridge piers and abutments to be built in the Kern River would raise the 100-year water surface in the river by no more than 0.15 foot (1.8 inches). The change is reduced to zero about 1,500 feet upstream of the proposed bridge. The impact from water rising less than 2 inches would not be adverse.

Alternative C

A 737-foot-long mainline bridge and about a 1,550-foot-long off-ramp bridge would be built over the Kern River. Based on the hydraulic analysis, bridge piers and abutments to be built in the Kern River would raise the 100-year water surface in the river by no more than 0.15 foot (1.8 inches). The change is reduced to zero about 1,500 feet upstream of the proposed bridge. The impact from water rising less than 2 inches would not be adverse.

Although no adverse impact is anticipated with any of the three build alternatives, any increase in the water surface elevation due to proposed improvements within the floodway must be approved by the Central Valley Flood Protection Board and the Federal Emergency Management Agency.

No-Build Alternative

No impacts to hydrology and floodplain would occur under the No-Build Alternative.

Avoidance, Minimization, and/or Mitigation Measures

The following measures would minimize floodplain impacts and preserve the beneficial floodplain values of the project area. In addition, Section 3.6, Construction Impacts, identifies standard conditions that would reduce impacts during construction.

Standard Condition

SC-FP-1 The following measures will be incorporated into project design to minimize flood flow impacts on the Kern River:

1. Project design elements will include incorporation of bridge piers and abutments that are parallel to the direction of water flow to minimize flow obstruction.
2. Pier placement will be optimized to align the piers with existing piers in the Kern River.
3. Bridge abutments will be located outside of or as close to the limits of the floodplain as possible to minimize the reduction of conveyance capacity of the Kern River.
4. Bridges will be designed with sufficient freeboard above the 100-year flood water surface elevation to prevent the bridge deck from affecting flood flows.

3.2.2 Water Quality and Storm Water Runoff

Regulatory Setting

Federal Requirements: Clean Water Act

In 1972, Congress amended the Federal Water Pollution Control Act, making the addition of pollutants to the waters of the United States, from any point source unlawful unless the discharge is in compliance with a National Pollutant Discharge Elimination System permit. This act and its amendments are known today as the

Clean Water Act, this act has been amended by Congress several times. In the 1987 amendments, Congress directed dischargers of storm water from municipal and industrial/construction point sources to comply with the National Pollutant Discharge Elimination System permit scheme. The following are important Clean Water Act sections:

- Sections 303 and 304 require states to issue water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for a federal license or permit to conduct any activity that may result in a discharge to waters of the United States, to obtain certification from the State that the discharge will comply with other provisions of the act. [Most frequently required in tandem with a Section 404 permit request. See below.]
- Section 402 establishes the National Pollutant Discharge Elimination System, a permitting system for the discharges (except for dredge or fill material) of any pollutant into waters of the United States. Regional Water Quality Control Boards administer this permitting program in California. Section 402(p) requires permits for discharges of storm water from industrial/construction and municipal separate storm sewer systems.
- Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the United States. This permit program is administered by the U.S. Army Corps of Engineers.

The goal of the Clean Water Act is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."

The U.S. Army Corps of Engineers issues two types of 404 permits: General and Standard permits. There are two types of General Permits: Regional permits and Nationwide permits. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to allow a variety of minor project activities with no more than minimal effects.

Ordinarily, projects that do not meet the criteria for a Nationwide Permit may be permitted under one of U.S. Army Corps of Engineer's Standard permits. There are two types of Standard Permits: Individual permits and Letters of Permission. For Standard permits, the U.S. Army Corps of Engineers decision to approve is based on compliance with U.S. Environmental Protection Agency's Section 404(b)(1) Guidelines (U.S. Environmental Protection Agency CFR 40 Part 230), and whether permit approval is in the public interest. The Section 404(b)(1) guidelines were developed by the U.S. Environmental Protection Agency in conjunction with the U.S. Army Corps of Engineers, and allow the discharge of dredged or fill material into the aquatic system (waters of the United States) only if there is no practicable alternative that would have a less adverse effect. The guidelines state that the U.S. Army Corps of Engineers may not issue a permit if there is a least environmentally damaging practicable alternative, to the proposed discharge that would have lesser effects on

waters of the United States, and not have any other significant adverse environmental consequences. According to the guidelines, documentation is needed that a sequence of avoidance, minimization, and compensation measures has been followed, in that order. The guidelines also restrict permitting activities that violate water quality or toxic effluent standards, jeopardize the continued existence of listed species, violate marine sanctuary protections, or cause "significant degradation" to waters of the United States. (The U.S. EPA defines "effluent" as "wastewater, treated or untreated, that flows out of a treatment plant, sewer, or industrial outfall.") In addition every permit from the U.S. Army Corps of Engineers, even if not subject to the Section 404(b)(1) guidelines, must meet general requirements. See 33 CFR 320.4.

State Requirements: Porter-Cologne Water Quality Control Act

California's Porter-Cologne Act, enacted in 1969, provides the legal basis for water quality regulation within California. This act requires a "Report of Waste Discharge" for any discharge of waste (liquid, solid, or gaseous) to land or surface waters that may impair beneficial uses for surface and/or groundwater of the state. It predates the Clean Water Act and regulates discharges to Waters of the State. Waters of the State include more than just Waters of the United States, like groundwater and surface waters not considered Waters of the United States. Also, it prohibits discharges of "waste" as defined; this definition is broader than the Clean Water Act definition of "pollutant." Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements and may be required even when the discharge is already permitted or exempt under the Clean Water Act.

The State Water Resources Control Board and Regional Water Quality Control Boards are responsible for establishing the water quality standards (objectives and beneficial uses) required by the Clean Water Act, and regulating discharges to ensure compliance with the water quality standards.

Details about water quality standards in a project area are included in the applicable Regional Water Quality Control Board Basin Plan. In California, Regional Water Quality Control Boards designate beneficial uses for all water body segments, and then set criteria necessary to protect these uses. As a result, the water quality standards developed for particular water segments are based on the designated use and vary depending on that use.

In addition, the State Water Resources Control Board identifies waters failing to meet standards for specific pollutants. These waters are then state-listed in accordance with Clean Water Act Section 303(d). If a state determines that waters are impaired for one or more constituents and the standards cannot be met through point source or non-point source controls, the Clean Water Act requires the establishment of Total Maximum Daily Loads. Total Maximum Daily Loads specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed.

State Water Resources Control Board and Regional Water Quality Control Boards

The State Water Resources Control Board administers water rights, sets water pollution control policy, and issues water board orders on matters of statewide application and oversees water quality functions throughout the state by approving Basin Plans, Total Maximum Daily Loads, and National Pollutant Discharge Elimination System permits. Regional Water Quality Control Boards are responsible for protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility.

National Pollutant Discharge Elimination System Program

Municipal Separate Storm Sewer Systems

Section 402(p) of the Clean Water Act requires the issuance of National Pollutant Discharge Elimination System permits for five categories of storm water dischargers, including Municipal Separate Storm Sewer Systems. An Municipal Separate Storm Sewer System is defined as "any conveyance or system of conveyances (roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, human-made channels, and storm drains) owned or operated by a state, city, town, county, or other public body having jurisdiction over storm water, that is designed or used for collecting or conveying storm water." The State Water Resources Control Board has identified Caltrans as an owner/operator of a Municipal Separate Storm Sewer System under federal regulations. This permit covers all Caltrans rights-of-way, properties, facilities, and activities in the state. The State Water Resources Control Board or the Regional Water Quality Control Board issues National Pollutant Discharge Elimination System permits for five years, and permit requirements remain active until a new permit has been adopted.

Caltrans' Municipal Separate Storm Sewer System Permit, (Order No. 2012-0011-DWQ, NPDES No. CAS000003) was adopted on September 19, 2012 and became effective on July 1, 2013, under revision at the time of this update, contains three basic requirements:

- Caltrans must comply with the requirements of the Construction General Permit (see below)
- Caltrans must implement a year-round program in all parts of the state to effectively control storm water and non-storm water discharges, and
- Caltrans storm water discharges must meet water quality standards through implementation of permanent and temporary (construction) Best Management Practices and other measures to the Maximum Extent Practicable, as the State Water Resources Board determines necessary to meet the water quality standards

To comply with the permit, Caltrans developed the Statewide Storm Water Management Plan to address storm water pollution controls related to highway planning, design, construction, and maintenance activities throughout California. The Storm Water Management Plan assigns responsibilities within Caltrans for

implementing storm water management procedures and practices as well as training, public education and participation, monitoring and research, program evaluation, and reporting activities. The Storm Water Management Plan describes the minimum procedures and practices Caltrans uses to reduce pollutants in storm water and non-storm water discharges. It outlines procedures and responsibilities for protecting water quality, including the selection and implementation of best management practices. The project will be programmed to follow the guidelines and procedures outlined in the latest Storm Water Management Plan to address storm water runoff.

Construction General Permit

Construction General Permit (Order No. 2009-0009-DWQ, as amended by 2010-0014-DWQ), adopted on September 2, 2009, became effective on July 1, 2010. The permit regulates storm water discharges from construction sites that result in a disturbed soil area of 1 acre or greater, and/or are smaller sites that are part of a larger common plan of development. By law, all storm water discharges associated with construction activity where clearing, grading, and excavation result in soil disturbance of at least 1 acre must comply with the provisions of the General Construction Permit. Construction activity that results in soil disturbances of less than 1 acre is subject to this Construction General Permit if there is potential for significant water quality impairment resulting from the activity as determined by the Regional Water Quality Control Board. Operators of regulated construction sites are required to develop a Storm Water Pollution Prevention Plan; implement sediment, erosion, and pollution prevention control measures; and obtain coverage under the Construction General Permit.

The Construction General Permit separates projects into Risk Level 1, 2 or 3. Risk levels are determined during the planning and design phases, and are based on potential erosion and transport to receiving waters. Requirements apply according to the risk level determined. For example, a Risk Level 3 (highest risk) project would require compulsory storm water runoff hydrogen potential (pH) and turbidity monitoring, and before-construction and after-construction aquatic biological assessments during specified seasonal windows.

For all projects subject to the permit, applicants are required to develop and implement an effective Storm Water Pollution Prevention Plan. In accordance with Caltrans' Standard Specifications, a Water Pollution Control Plan is necessary for projects with a disturbed soil area less than 1 acre.

Section 401 Permitting

Under Section 401 of the Clean Water Act, any project requiring a federal license or permit that may result in a discharge to a water body must obtain a 401 Certification, which certifies that the project will comply with state water quality standards. The most common federal permits triggering 401 Certification are Clean Water Act Section 404 permits issued by the U.S. Army Corps of Engineers. The 401 permit certifications are obtained from the appropriate Regional Water Quality Control

Board, dependent on the project location, and are required before the U.S. Army Corps of Engineers issues a 404 permit.

In some cases, the Regional Water Quality Control Board may have specific concerns with discharges related to a project; the Regional Water Quality Control Board may then issue a set of requirements known as Waste Discharge Requirements under the State Water Code that define activities, such as the inclusion of specific features, effluent limitations, monitoring, and plan submittals that are to be implemented for protecting or benefiting water quality. Waste Discharge Requirements can be issued for both permanent and temporary discharges of a project.

Affected Environment

Analysis in this section is based on the *Water Quality Assessment Report* (November 2012) technical study prepared for the project.

The Centennial Corridor is within the Kern Delta hydrologic area within the South Valley Floor hydrologic unit of the Tulare Lake hydrologic basin. Receiving water bodies in the Kern Delta hydrologic area include the Kern River, Carrier Canal, Stine Canal, and Kern Island Canal. The Kern River receives storm water runoff from the project area through sheet flow and a number of drainage pipes, canals, retention basins, cross culverts, pump stations, and landscaped areas.

The Tulare Lake hydrologic basin is under the jurisdiction of the Central Valley Regional Water Quality Control Board. The board has prepared a Water Quality Control Plan for the Tulare Lake Basin that lists the beneficial uses of the Kern River as (1) Municipal and Domestic Supply; (2) Agricultural Supply; (3) Industrial Service Supply; (4) Industrial Process Supply; (5) Hydropower Generation; (6) Water Contact Recreation; (7) Non-Contact Water Recreation; (8) Warm Freshwater Habitat; (9) Wildlife Habitat; (10) Rare, Threatened or Endangered Species (Habitat); and (11) Groundwater Recharge.

Surface water quality in the Kern River and other surface water bodies within the Tulare Lake Basin is generally good. To protect water quality, the Central Valley Regional Water Quality Control Board has established water quality objectives for inland surface waters. Water bodies that do not meet the water quality objectives are considered “impaired” under Section 303(d) of the Clean Water Act. None of the water bodies within the project area have been identified as “impaired.”

The Southern San Joaquin Groundwater Basin underlies the project area. This groundwater basin is a subbasin of the Tulare Lake hydrologic region. Average depth to groundwater in the project area is estimated at 80 to 120 feet below the ground surface. Variations in groundwater depth may be due to seasonal groundwater fluctuations, weather conditions, surface runoff, and other factors.

Groundwater is the main source of domestic water supply in the Bakersfield area, with the Kern River water and imported water as supplemental sources. Aside from the river channel, there are recharge ponds along the river, recharge facilities, ground

percolation programs, canal seepage, spreading/banking projects, and wastewater reclamation that contribute to local groundwater recharge.

The Central Valley Regional Water Quality Control Board has established water quality objectives for groundwater in terms of bacteria, chemical constituents, pH, pesticides, radioactivity, salinity, tastes and odors, and toxicity. Beneficial uses for groundwater in the Kern County Subbasin of the Southern San Joaquin Groundwater Basin are (1) Municipal and Domestic Supply; (2) Agriculture Supply; (3) Industrial Process Supply; (4) Industrial Service Supply; (5) Water Contact Recreation; (6) Non-Contact Water Recreation; and (7) Wildlife Habitat. Groundwater quality in the Tulare Lake hydrologic region is suitable for most urban and agricultural uses.

Environmental Consequences

Common to All Build Alternatives

Under the build alternatives, the project would increase the impervious surface area and potentially increase storm water runoff from construction of Segment 1 and improvement at Stockdale Highway and State Route 43 under Segment 3 as part of the establishment of the Centennial Corridor (see Table 3.21).

Table 3.21 Changes in Impervious Surface Area

Build Alternative	Existing Impervious Area	Construction Disturbance Area	Increase in Impervious Area	Total Proposed Impervious Area
Alternative A	89 acres	1,125 acres	66 acres	155 acres
Alternative B	129 acres	1,020 acres	34 acres	163 acres
Alternative C	129 acres	1,124 acres	99 acres	228 acres
Source: Developed from the *Water Quality Assessment Report* 2012.				

Infiltration basins are proposed to collect runoff from the proposed improvements, which would help ground infiltration, reduce offsite runoff volumes and velocities, and remove pollutants in storm water.

Pollutants associated with the use of the proposed freeway/roadway include sediment from natural erosion; nutrients (phosphorus and nitrogen) from freeway landscaping; mineralized organic matter in soils; nitrite discharges from automobile exhausts and atmospheric fallout; litter; and metals from the combustion of fossil fuels, the wearing of brake pads, and the corrosion of galvanized structures. Table 3.22 identifies pollutants that could be generated by long-term use of the Centennial Corridor.

Table 3.22 Infrastructure Operation and Associated Pollutants

Pollutant Source	Pollutants
Motor Vehicles	Oil Grease Petroleum Coolants Nitrite Metals
Highway Maintenance	Asphalt Sediment Mineralized Organic Matter Thermoplastics Treated Wood Tree/Shrub Clippings
Landscaping	Aluminum Sulfate Sulfur-elemental Fertilizers – Inorganic and Organic Natural Earth (sand, gravel and topsoil) Herbicide Pesticide Lime
Illegal Dumping	Trash Oil/Grease
Spills	Hazardous and non-hazardous chemicals
Source: Developed from the *Water Quality Assessment Report* 2012.	

Pollutants from transportation facilities that commonly exceeded standards that are considered treatable by Caltrans-approved treatment best management practices are called "Targeted Design Constituents." Such constituents include sediment, metals (such as total and dissolved fractions of zinc, lead, and copper), nitrogen (including ammonia), phosphorus, and general metals. Although the anticipated ammonia levels that could be generated by use of the Centennial Corridor may exceed the water quality objective for the Kern River and other surface water bodies in the project area (see Figure 3-29), use of treatment best management practices would reduce ammonia levels in storm water runoff and reduce potential adverse impacts to surface water and groundwater.

Pile driving, dewatering and construction activities could encounter groundwater. While piles and foundations may reduce the storage capacity of the underlying groundwater, the displaced volume would not be great compared to the total volume of the groundwater basin. The volume of water used for construction, dust control, and other uses would be nominal. So, construction activities would not deplete groundwater supplies, nor would they interfere with groundwater recharge. The Central Valley Regional Water Quality Control Board has adopted regulations for dewatering activities (Order No. R5-00-175) to reduce effects on surface water. Compliance with the Central Valley Regional Water Quality Control Board's regulations would minimize impacts from dewatering activities.

Segment 2 of the Centennial Corridor project (Westside Parkway) is now in construction. The Westside Parkway project has incorporated water quality and storm

water runoff protection consistent with Caltrans' standards. The improvements within Segment 2 (auxiliary lanes and minor ramp changes) would have nominal influence on surface water or groundwater quality because the improvements are within the Westside Parkway right-of-way, portions of which would be paved as part of the ongoing construction activities.

Adding turn lanes and a traffic signal at the Stockdale Highway and State Route 43 intersection in Segment 3 would only slightly increase the impervious surface area. The use of Stockdale Highway as a connection to Interstate 5 would not change the drainage of the roadway because no improvements beyond those at State Route 43 are required. It would also not substantially change the effects on water quality.

No long-term increase in surface water pollutants would occur with any of the build alternatives. Impacts to water quality and storm water runoff during project construction are discussed in Section 3.6, Construction Impacts.

No-Build Alternative

No ground disturbance, demolition or construction would occur under the No-Build Alternative. So, no impacts on water quality and storm water runoff would occur under this alternative. No new impervious areas that could increase storm water runoff volume and pollutants would be created by the No-Build Alternative.

Avoidance, Minimization, and/or Mitigation Measures

Disturbed soil areas and slopes would be stabilized with permanent landscaping and/or permanent erosion-control measures as part of the Design Pollution Prevention best management practices in Caltrans' Storm Water Management Plan. In addition, velocity dissipation devices would be used in design to reduce erosion potential. Standard best management practices would maintain runoff patterns, volumes, and velocities, and would prevent erosion, channel scouring, and sediment deposition. Standard best management practices include the following:

- Consideration of downstream effects (such as flow rate and pollutant concentration) related to potentially increased flow, including peak-flow attenuation devices, reduction of paved surface, soil modification, and energy dissipation devices.
- Preservation of existing vegetation
- Concentrated flow conveyance systems (ditches, berms, dikes, and swales, overside drains, downdrains, paved spillways, channel linings, flared culvert end sections, outlet protection/velocity dissipation devices)
- Slope/Surface protection systems (specifically, vegetated surfaces, benching/terracing, slope rounding, reduce gradients, hard surfaces)

The treatment best management practices (which include use of biofiltration systems, infiltration devices, detention devices, dry weather flow diversions, gross solid removal devices, multi-chambered treatment trains, wet basins, traction sand traps, and media filters) have been evaluated for use throughout the alignments. The report

found that the use of infiltration basins throughout the alignment of each build alternative would allow the storm water runoff to use the natural filtering ability of the soil to remove pollutants. Runoff from all new impervious surfaces would be directed into the infiltration basins for treatment and so would not create any surface water or groundwater quality impacts.

With the incorporation of project design features and standard best management practices into the project, no mitigation measures are required.

Standard conditions for impacts as a result of construction activities are provided in Section 3.6, Construction Impacts.

3.2.3 Geology/Soils/Seismic/Topography

Regulatory Setting

For geologic and topographic features, the key federal law is the Historic Sites Act of 1935, which establishes a national registry of natural landmarks and protects "outstanding examples of major geological features." Topographic and geologic features are also protected under the California Environmental Quality Act.

This section also discusses geology, soils, and seismic concerns as they relate to public safety and project design. Earthquakes are prime considerations in the design and retrofit of structures. The Caltrans Office of Earthquake Engineering is responsible for assessing the seismic hazard for Caltrans projects. Structures are designed using the Caltrans Seismic Design Criteria, which provide the minimum seismic requirements for highway bridges designed in California. A bridge's category and classification will determine its seismic performance level and which methods are used for estimating the seismic demands and structural capabilities. For more information, see the Caltrans Division of Engineering Services, Office of Earthquake Engineering, Seismic Design Criteria.

Affected Environment

Information in this section comes from the *Preliminary Geotechnical Report - Centennial Corridor* (revised May 2012).

The San Joaquin Valley is a large plain with a slight southwesterly slope bound by the Coast Ranges to the west, the Sierra Nevada to the east, the Transverse Range to the south, and the San Joaquin/Sacramento Delta to the north. The project area is in the southern portion of the San Joaquin Valley, with the Kern River flowing northeast to southwest.

The project area is nearly flat, with a ground elevation at 380 feet above mean sea level near the intersection of the Westside Parkway and Coffee Road, rising to 405 feet above mean sea level at the intersection of State Route 99 and Gilmore Avenue. Although the area is essentially flat, the site slopes gently to the southwest in the same direction as the flow of the Kern River, which crosses the eastern half of the project area under State Route 99, the BNSF railroad tracks, Mohawk Street and Coffee Road.

The project site is underlain by human-made roadway fill embankments and alluvial fan deposits from the Kern River. Roadway fill embankment materials consist of sands with lesser amounts of silt, gravel and clay.

The project area is not within an Alquist-Priolo Earthquake Fault Zone, as designated by the California Geological Survey. No known active faults go toward or run through the project area, but the area is within a seismically active region of California. Several active faults within the region could produce significant ground shaking at the project site. The closest known active faults to the site are the Kern Front (4.2 miles north of the site at its nearest point), White Wolf (16.5 miles to the southeast), Pleito Thrust (23.2 miles to the south), and San Andreas faults (33 miles to the southwest).

Eleven soil borings were drilled along the three proposed alignments for Segment 1 to get soil information for preliminary design. Boring depths ranged from 11.5 to 86.5 feet. The soil analysis indicated that the upper subsurface materials are susceptible to caving and the soils are non-corrosive to buried metal structures.

Groundwater was encountered in two soil borings. Near the intersection of California Avenue and Lennox Avenue (within Alternative A), groundwater was encountered 70 feet below ground (at an elevation of 322 feet above mean sea level). Near Commerce Drive (within Alternative B), groundwater was encountered 24 feet below ground (at an elevation of 374 feet above mean sea level). Groundwater was not encountered in the other nine borings drilled to maximum depths of 12 to 87 feet. In addition, shallow water conditions may be present near the Kern River and in areas where surface water infiltrates into the ground from unlined canals.

Environmental Consequences

Common to All Alternatives

Grading would not affect any designated natural landmarks as there are no officially-designated natural landmarks or other major geological features within the project area.

The California Geological Survey has not found seismic hazards (including liquefaction and landslides due to earthquake) in the project area. While groundwater levels are estimated to be deeper than 50 feet below the ground surface (which is typically the greatest depth to which liquefaction hazards would occur), near the Kern River, groundwater levels vary seasonally and may be shallower than 50 feet below the ground surface, as seen in one soil boring. Fluctuations in the groundwater level are due to the change in seasons, variations in rainfall, and proximity to the Kern River. Analysis done for the project concluded that liquefaction is unlikely. However, foundations supporting bridges would be designed to withstand the effects of soil liquefaction consistent with Caltrans design specifications.

Earthquakes could lead to ground-shaking hazards in the project area. Using Caltrans seismic design procedures would ensure the structural integrity of structures and reduce hazards to the travelling public during a major earthquake in the region.

As standard engineering practice, the design of embankments and retaining walls would account for long-term settlement, elastic settlement, resistance to lateral loads, lateral earth pressure, increase in vertical and lateral pressures on existing underground utilities, factors of safety for slope stability, and structural stability. Therefore, permanent slopes would be designed no steeper than 2:1 (2 horizontal to 1 vertical). Structures to be supported on shallow foundations would be placed on a layer of compacted fill and should account for total and differential settlements.

Retaining wall selection and design would be based on several considerations (i.e., construction sequence, extent of earthwork, cost, effect on adjacent properties, need for shoring or slope cut, corrosion protection, amount of import fill, and aesthetics). Other factors considered in the engineering design of the project include resistance of underlying soils for pavement thickness, soil corrosion potential, and slopes of utility trenches.

Though soils have the potential to cave, standard construction practices would protect the construction crew from the collapse of slopes within excavation areas and trenches. This would apply for all areas where trenching is required.

Improvements at the Stockdale Highway and State Route 43 (Enos Lane) intersection in Segment 3 would not result in any adverse effects because minimal grading would be required and no geotechnical constraints are expected.

Impacts from construction activities are addressed in Section 3.6, Construction Impacts.

No-Build Alternative

Because no ground disturbance would occur under the No-Build Alternative, there would be no impacts on geology, soils, seismicity or topography. Existing geologic and seismic hazards would remain.

Avoidance, Minimization, and/or Mitigation Measures

The project would be designed to minimize geotechnical impacts. Because there would be no geotechnical impacts using standard design practices, no mitigation measures are required.

3.2.4 Paleontology

This section presents an overview of potential impacts on important paleontological resources.

Regulatory Setting

Paleontology is a natural science focused on the study of ancient animal and plant life as it is preserved in the geologic record as fossils.

A number of federal statutes specifically address paleontological resources and their treatment and funding for mitigation as a part of federally authorized or funded projects (such as the Antiquities Act of 1906 [16 U.S. Code 431-433] and Federal-

Aid Highway Act of 1960 [23 U.S. Code 305]). Under California law, paleontological resources are protected by the California Environmental Quality Act. 23 United States Code (USC) 305 authorizes the appropriation and use of federal highway funds for paleontological salvage as necessary by the highway department of any state, in compliance with 16 USC 431-433 above and state law.

Affected Environment

Information in this section comes from the *Paleontological Evaluation Report* (November 2012).

The project area sits on the San Joaquin Valley floor, a fairly featureless plain that slopes gently southwesterly to the valley axis. Near its northeastern end, the project area crosses the Kern River. Regional surficial geologic mapping indicates the project area is underlain by four sedimentary stratigraphic units, all of continental origin. In ascending stratigraphic order, these stratigraphic units include Pleistocene non-marine sedimentary deposits (includes Turlock Lake and Riverbank Formations elsewhere in the San Joaquin Valley), recent alluvial fan deposits of the Great Valley (includes Modesto Formation elsewhere in the San Joaquin Valley), recent basin deposits of the Great Valley, and recent river and major stream channel deposits of the Great Valley.

Fossilized remains of mostly extinct continental vertebrate species have been recorded in Pleistocene non-marine deposits at numerous localities in the San Joaquin Valley. Additionally, although Holocene deposits are typically too young to yield fossilized remains, Pleistocene age fossils have also been recovered in units mapped on the surface as Holocene age in other areas of the San Joaquin Valley, indicating that Pleistocene sediments were either present immediately below or that fossils from surrounding Pleistocene deposits were re-deposited in the Holocene age sediments. Excavation in units identified as Holocene is not likely to encounter Pleistocene sediments at depths above five feet as referenced to the native ground surface (see Figure 3-30).

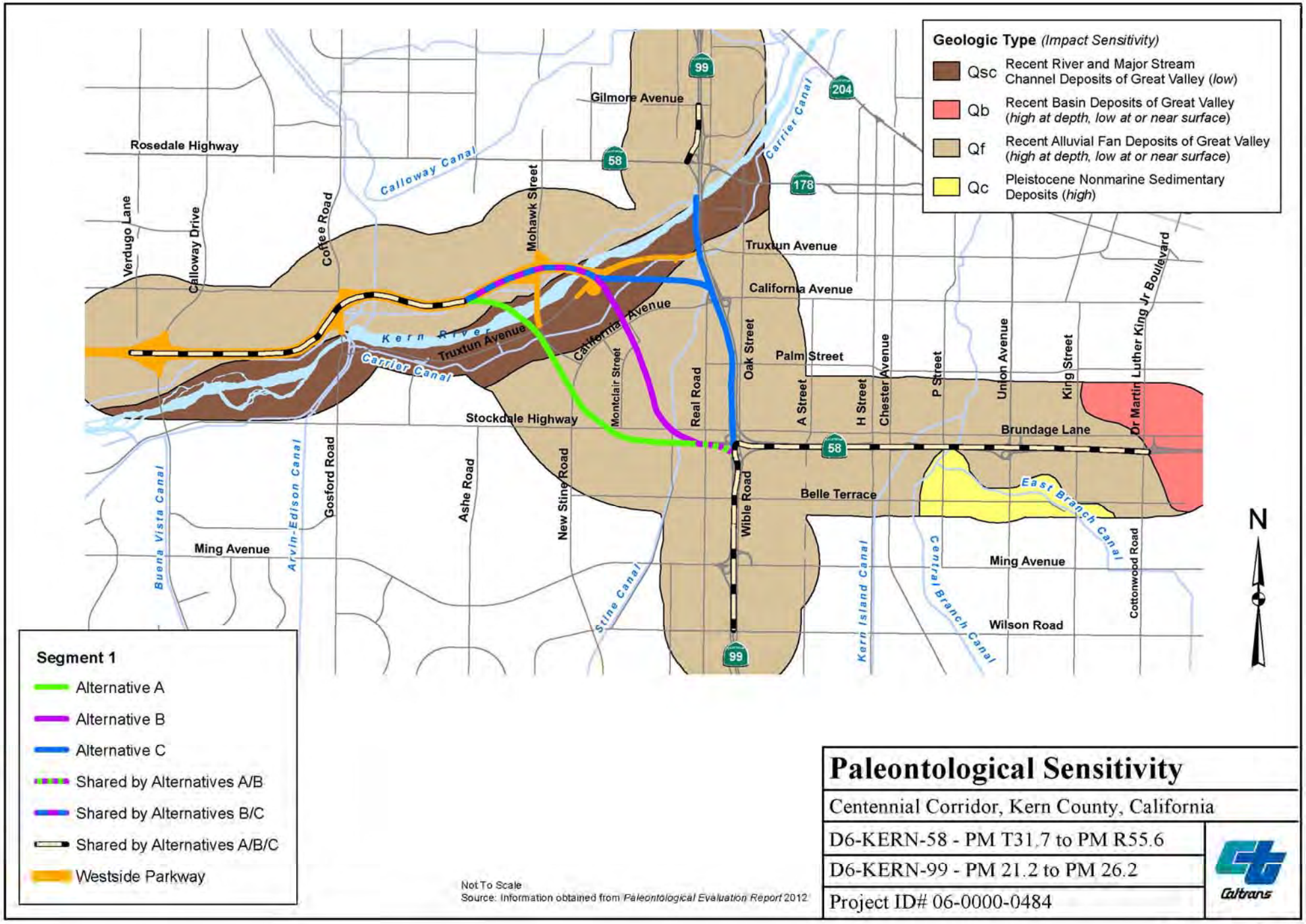
No fossils were found during paleontological surveys of the project area.

Environmental Consequences

Potential construction-related impacts of the build alternatives are discussed in Section 3.6 of this environmental document. There would be no impact on paleontological resources under the No-Build Alternative.

Avoidance, Minimization, and/or Mitigation Measures

Mitigation measures to prevent impacts to significant fossils will be incorporated during construction through the use of a Paleontological Mitigation Plan involving monitoring during excavation in select locations, since excavation into highly sensitive deposits would occur as a result of construction activities. The mitigation program is discussed in Section 3.6, Construction Impacts.



Not To Scale
Source: Information obtained from *Paleontological Evaluation Report* 2012

Paleontological Sensitivity

Centennial Corridor, Kern County, California

D6-KERN-58 - PM T31.7 to PM R55.6

D6-KERN-99 - PM 21.2 to PM 26.2

Project ID# 06-0000-0484

Caltrans

Figure 3-30

3.2.5 Hazardous Waste or Materials

Regulatory Setting

Hazardous materials including hazardous substances and wastes are regulated by many state and federal laws. Specific statutes govern the generation, treatment, storage, and disposal of hazardous materials, substances and waste, and also the investigation and mitigation of waste releases, air and water quality, human health, and land use.

The main federal laws regulating hazardous wastes/materials are the Comprehensive Environmental Response, Compensation and Liability Act of 1980 and the Resource Conservation and Recovery Act of 1976. The purpose of the Comprehensive Environmental Response, Compensation and Liability Act of 1980, often referred to as Superfund, is to identify and clean up abandoned contaminated sites so that public health and welfare are not compromised. The Resource Conservation and Recovery Act of 1976 provides for “cradle to grave” regulation of hazardous wastes. Other federal laws include:

- 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.

California regulates hazardous materials, waste and substances under the authority of the California Health and Safety Code and is also authorized by the federal government to implement the Resource Conservation and Recovery Act of 1976 in the state. California law also addresses specific handling, storage, transportation, disposal, treatment, reduction, cleanup, and emergency planning of hazardous waste. The Porter-Cologne Water Quality Control Act also restricts disposal of wastes and requires cleanup of wastes that are below hazardous waste concentrations but could impact ground and surface water quality. California regulations that address waste management and prevention and cleanup of contamination include Title 22 Division 4.5 Environmental Health Standards for the Management of Hazardous Waste, Title 23 Waters, and Title 27 Environmental Protection.

Worker and public health and safety are key issues when addressing hazardous materials that may affect human health and the environment. Proper disposal of hazardous materials is vital if it is found, disturbed or generated during project construction.

Affected Environment

Information in this section comes from the *Initial Site Assessment for the Centennial Corridor Project* (November 2012) and *Focused Initial Site Assessment for the Centennial Corridor Project* (October 2013).

An Initial Site Assessment was done to address potential impacts associated with hazardous materials for all portions of the project where additional right-of-way would be required for the project or where adjacent contamination could affect the construction activities. The evaluation included a site visit, a review of the project area history, and a review of official records (an environmental database report and regulatory agency file reviews) to identify sites of hazardous waste concern. As described in Chapter 2, Segment 2 of the Centennial Corridor project is composed of the Westside Parkway, which was previously evaluated in the *Westside Parkway Environmental Assessment/Final Environmental Impact Report*. However, the *Initial Site Assessment for the Centennial Corridor Project* did include the easterly portion of the Westside Parkway where improvements are proposed.

The Initial Site Assessment evaluated 850 parcels that are part of the project area, with 197 parcels identified to be part of more than one alternative route. Due to the large number of parcels that were assessed, the privately owned parcels were observed from public property. The Initial Site Assessment did not include screening or testing for aerially deposited lead, asbestos, radon, lead paint, lead in drinking water, or urea formaldehyde. Between the draft environmental document and the final environmental document, sampling for these materials, as applicable, would be done. Should such materials be found during sampling, they would be handled in accordance with applicable federal, state, and local regulatory requirements.

The three alternatives being studied for Segment 1 of the project pass through a mix of residential, commercial, and light industrial land use areas. There are residential communities west of State Route 99 and north and south of Stockdale Highway. Some of the businesses use materials classified as hazardous. These include gas stations, paint stores, and automotive support businesses. Oil refineries and businesses that support the oil and gas industry are north of the alignment. These uses have open fields that contain oil wells, aboveground storage tanks, and petroleum pipelines. Oil cake sand (a mixture of oil residue and sand) was found on several of these parcels.

The Kern River, Cross Valley Canal, Stine Canal, and Carrier Canal are in the project area. Each build alternative in Segment 1 crosses the Kern River and Stine Canal. Vacant parcels with scattered oil wells and an oil refinery are north of the Kern River. Segment 3, including the intersection of Stockdale Highway and State Route 43, passes through mostly open space (undeveloped) and agricultural lands.

Following the completion of the initial site assessment and the identification of the recommended preferred alternative, a focused initial site assessment was conducted to further evaluate the need to do testing of potential hazardous materials at any parcel or structure to be affected by Alternative B. The focused initial site assessment was developed based on the results of the following activities: review of Initial Site Assessment recommendations; communication with project engineer on current design and proposed right-of-way acquisition; coordination with the City Right-of-Way staff and the previous Hazardous Material Specialist on the Westside Parkway project; and field visits of the ranked parcels identified for Alternative B in the initial site assessment.

Environmental Consequences

Parcels within the project boundaries were ranked for their potential for containing hazardous materials/wastes:

- Rank 1: Parcels within the study area that are known to be contaminated with hazardous wastes or substances.
- Rank 2: Parcels within the study area that are suspected of being contaminated with hazardous wastes or substances.
- Rank 3: Parcels that have the potential to be contaminated with hazardous wastes or substances within the study area or having the potential to impact the proposed study area due to known or suspected hazardous wastes or substances located on the parcel.
- NR (no numbered rank): Parcels with no significant potential for the presence of hazardous waste or substances impacting the proposed study area.

Detailed information on sites ranked 1 through 3 for each of the alternatives, as well as the maps showing the location of the ranked parcels, is provided in Appendix H in Volume 2.

Common to All Build Alternatives

The project would make improvements in all segments of the corridor. Most of the construction requiring new right-of-way is in Segment 1 and to a lesser extent Segment 3 near Stockdale Highway and State Route 43. The minor improvements being made within Segment 2 are mostly within the original construction footprint of the Westside Parkway. Any hazardous waste remediation required for the Westside Parkway project has already been completed as part of that project. The *Initial Site Assessment for the Centennial Corridor Project* addressed the minor additional right-of-way required within Segment 2 (minor sliver acquisitions between Mohawk Street and Coffee Road, see Figures 3-10a–c, provided in Volume 2).

Previous sampling of surface soils along State Routes 58 and 99 near the project limits indicated that there were hazardous levels of lead to a depth of 1.5 feet likely due to the historic use of leaded fuel and emissions settling on the ground. Older buildings and/or bridge structures that are subject to demolition or renovation under

each build alternative may contain asbestos and lead-based paint. Both yellow and white traffic paint, striping, and markings on roadways could also contain high lead levels. Testing to identify the extent of these hazardous materials will be done and the results will be incorporated into the final environmental document.

Ground-disturbing as well as demolition/renovation activities could potentially expose workers and the public to hazardous wastes or materials.

Alternative A

Five parcels in the Alternative A project area are categorized as Rank 1: four are partial acquisitions and one is a full acquisition. All potentially have soil contamination as a result of oil and oil-production activities. Division of Oil and Gas maps indicate that one parcel contains active and inactive wells; another parcel contains an inactive well.

Alternative A would require a partial right-of-way acquisition from six parcels and full acquisitions of nine parcels that are listed as Rank 2. The potential contaminants in most of these parcels include active or inactive oil wells onsite from oil-pumping activities. Site cleanup may be required before use.

Partial or full acquisition of 14 parcels listed as Rank 3 would be required. Three parcels would require a partial acquisition; five parcels would require a full acquisition; five parcels would be required for a temporary construction easement; and one parcel would be required for a permanent easement. Potential contaminants in most of these parcels include water disposal wells, a leak from a transformer onto soil, presence of an underground storage tank, and use of chemicals in operations.

Seven water infiltration basins are proposed along Alternative A. All but one of the basins would be on parcels listed as No Rank. Only one basin would be on a parcel classified as Rank 3.

Alternative B

Five parcels within the Alternative B project area are classified as Rank 1: three are full acquisitions and two are partial acquisitions. All potentially have soil contamination as a result of oil and oil-production activities. Division of Oil and Gas maps indicate that one parcel contains active and inactive wells; another parcel contains one inactive well.

Alternative B would require acquisitions from the 11 parcels classified Rank 2; four are partial acquisitions; six are full acquisitions; and a temporary construction easement would be needed from one parcel. The potential contaminants in most of these parcels include active or inactive oil wells onsite from oil-pumping activities. Site clean up may be required before use.

Partial or full acquisition of 12 parcels listed as Rank 3 would be required. Two parcels would require a partial acquisition; four parcels would require a full acquisition; five parcels would be required for a temporary construction easement;

and one parcel would be required for a permanent easement. The potential contaminants in most of these parcels include water disposal wells, a leak from a transformer onto soil, presence of an underground storage tank, and use of chemicals in operations.

Eight water infiltration basins are proposed along Alternative B. All of these basins are on parcels that are listed as No Rank.

As indicated above, a focused initial site assessment has been conducted for Alternative B. Based on the results of the focused initial site assessment, the following Preliminary Site Investigation sampling is proposed and will be done before the completion of the final environmental document.

- Conduct soil sampling at seven potentially contaminated parcels to identify presence or absence of hazardous materials and the extent of contamination. Testing requirements for each parcel was determined based on several factors, such as presence or absence of the hazardous material and hazardous wastes reported in the initial site assessment, right-of-way acquisition, proposed use of the parcels, and effect from project construction. The focused initial site assessment found that the former Tosco Coke Pile site (APN#502-010-12) has been cleaned up. Therefore, no further testing is required.
- Conduct shallow soil sampling along State Route 99 and State Route 58 within the project limit to identify presence or absence of aerially-deposited lead.

Alternative C

Five parcels within the Alternative C project area are classified as Rank 1: one is a full acquisition and four are partial acquisitions. All potentially have soil contamination as a result of oil and oil-production activities. Division of Oil and Gas maps indicate that one parcel contains active and inactive wells; another parcel contains one inactive well.

Alternative C would require a partial acquisition from three parcels and full acquisitions of 11 parcels that are listed as Rank 2. Potential contaminants in most of these parcels include active or inactive oil wells onsite from oil-pumping activities. Site clean up may be required before use.

Partial or full acquisition of 23 parcels listed as Rank 3 would be required. Five parcels would require partial acquisition, and 16 parcels would need full acquisition. In addition, there would be one temporary construction easement and one permanent easement. Potential contaminants in most of these parcels include water disposal wells, a leak from a transformer onto soil, presence of an underground storage tank, and use of chemicals in operations.

Eleven infiltration basins are proposed for Alternative C. Infiltration basins on six parcels have been identified as Rank 3. These include a multi-tenant commercial property, a residential property, and a commercial property.

Construction impacts pertaining to hazardous materials and wastes are discussed in Section 3.6 of this document.

No-Build Alternative

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

Avoidance, Minimization, and/or Mitigation Measures

As identified in the minimization measures below, a Preliminary Site Investigation for the selected alternative (Alternative B) would be done before the final environmental document to ensure that sites with potential contaminants are studied, cleanup methods are identified, and health and safety measures are addressed consistent with federal, state, and local requirements before project construction. Results of the site investigation will be reported in the final environmental document. If hazardous materials/wastes are found as a result of the Preliminary Site Investigation, site clean up will be conducted between the right-of-way acquisition and the project construction periods. Caltrans will comply with its policy with regard to acquisition of contaminated property as required by the project. Early coordination with relevant regulatory agencies such as, but not limited to, the California Environmental Protection Agency Department of Toxic Substances Control, Kern County Department of Environmental Health Services, and the City of Bakersfield Fire Department would be undertaken as soon as the results of the Preliminary Site Investigation are available to identify any necessary permits and approvals needed.

Based on the evaluation in the *Initial Site Assessment for the Centennial Corridor Project* (November 2012), a preliminary assessment of cost for remediation (clean-up) of hazardous materials is estimated to be $8,711,250 for Alternative A, $7,935,000 for Alternative B, and $9,947,500 for Alternative C, as can be seen in Table 4 of the *Initial Site Assessment*. Based on the evaluation in the focused initial site assessment, the cost to clean up hazardous materials within the seven parcels identified for testing is estimated at $1,150,000. The cost estimate will be revisited after the Preliminary Site Investigation is complete. The cost to clean up hazardous materials is generally the property owner's responsibility. Any remedial activity would occur before property acquisition. Some costs, however, should be budgeted as part of the project. A reasonable estimate may be up to 25 percent of the total clean-up cost.

Minimization Measures

H-1 Prior to finalization of the environmental document, a Preliminary Site Investigation for the preferred alternative (Alternative B) shall be conducted to determine the existence and the level of contamination, if any. If contamination is identified, the wastes/materials shall be handled in accordance with all applicable federal, State, and local regulatory requirements.

H-2 Special provisions shall be included in the construction contract. Contractors will be required to prepare and work under a Health and Safety Contingency Plan(s), which will address worker safety when working with potentially hazardous materials including asbestos, lead-based paint, aerially-deposited lead and/or other construction-related materials within the project right-of-way. Asbestos-containing materials sampling and analysis of buildings subject to demolition will be done by the contractor, as needed, prior to demolition and the statement of work will be included in the specifications.

H-3 As part of project design, a Soil Management Plan shall be developed to ensure that soil excavated during the project construction which is impacted by metals or petroleum hydrocarbons is handled, stockpiled, and disposed of in accordance with federal, state, and local regulations. The Soil Management Plan will also establish Reuse Screening Levels for the excavated soils with contaminant concentrations below the Reuse Screening Levels, which may be reused during construction projects on the right-of-way, while soils with contaminant concentrations exceeding the Reuse Screening Levels will need to be managed as hazardous wastes and disposed of at a Class I landfill.

H-4 Prior to any soil disturbance at the former Tosco Coke Pile (APN#502-010-12), the Department of Toxic Substances Control shall be properly notified.

3.2.6 Air Quality

Regulatory Setting

The Federal Clean Air Act as amended, is the primary federal law that governs air quality while the California Clean Air Act is its companion state law. These laws, and related regulations by the U.S. Environmental Protection Agency and California Air Resources Board, set standards for the concentrations of pollutants in the air. At the federal level, these standards are called the National Ambient Air Quality Standards. National and state ambient air quality standards have been established for six transportation-related criteria pollutants that have been linked to potential health concerns: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM), which is broken down for regulatory purposes into particles of 10 micrometers or smaller – (PM_{10}) and particles of 2.5 micrometers and smaller – ($PM_{2.5}$), and sulfur dioxide (SO_2). In addition, national and state standards exist for lead (Pb), and state standards exists for visibility-reducing particles, sulfates, hydrogen sulfide (H_2S), and vinyl chloride. The national and state standards are set at levels that protect public health with a margin of safety and are subject to periodic review and revision. Both state and federal regulatory schemes also cover toxic air contaminants (air toxics); some criteria pollutants are also air toxics or may include certain air toxics in their general definition.

Federal air quality standards and regulations provide the basic scheme for project-level air quality analysis under the National Environmental Policy Act. In addition, to this environmental analysis, a parallel “Conformity” requirement under the Federal Clean Air Act also applies.

Conformity

The conformity requirement is based on Federal Clean Air Act Section 176(c), which prohibits the U.S. Department of Transportation and other federal agencies from funding, authorizing, or approving plans, programs, or projects that do not conform to the State Implementation Plan for attaining the National Ambient Air Quality Standards. "Transportation Conformity" applies to highway and transit projects and takes place on two levels: the regional (or planning and programming) level and the project level. The project must conform at both levels to be approved.

Conformity requirements apply only in nonattainment and "maintenance" (former nonattainment) areas for the National Ambient Air Quality Standards, and only for the specific standards that are or were violated. U.S. Environmental Protection Agency regulations at 40 CFR 93 govern the conformity process. Conformity requirements do not apply in unclassifiable/attainment areas for NAAQS and do not apply at all for state standards regardless of the status of the area.

Regional conformity is concerned with how well the regional transportation system supports plans for attaining the standards set for carbon monoxide, nitrogen dioxide, ozone, particulate matter (PM_{10} and $PM_{2.5}$), and in some areas (although not in California) sulfur dioxide. California has non-attainment or maintenance areas for all of these transportation-related "criteria pollutants" except sulfur dioxide, and also has one non-attainment area for lead. However, lead is not currently required by the Federal Clean Air Act to be covered in a transportation conformity analysis. Regional conformity is based on emissions analysis of Regional Transportation Plans and Federal Transportation Improvement Programs that include all transportation projects planned for a region over a period of at least 20 years for the Regional Transportation Plan, and 4 years for the Federal Transportation Improvement Program. Regional Transportation Plan and Federal Transportation Improvement Program conformity is based on travel demand and emissions models to determine whether or not the implementation of those projects would conform to emission budgets or other tests at various analysis years showing that requirements of the Clean Air Act and the State Implementation Plan are met. If the conformity analysis is successful, the Metropolitan Planning Organization and Federal Highway Administration, and/or Federal Transit Administration make determinations that the Regional Transportation Plan and Federal Transportation Improvement Program are in conformity with the State Implementation Plan for achieving the goals of the Federal Clean Air Act. Otherwise, the projects in the Regional Transportation Plan and/or Federal Transportation Improvement Program must be modified until conformity is attained. If the design concept, scope, and "open to traffic" schedule of a proposed transportation project are the same as described in the Regional Transportation Plan and Federal Transportation Improvement Program, then the project meets regional conformity requirements for purposes of project-level analysis.

Conformity analysis at the project-level includes verification that the project is included in the regional conformity analysis and a "hot spot" analysis if an area is a "nonattainment" or "maintenance" area for carbon monoxide and/or particulate matter (PM_{10} or $PM_{2.5}$). A region is "nonattainment" if one or more of the monitoring

stations in the region measures a violation of the relevant standard, and the U.S. Environmental Protection Agency officially designates the area as a nonattainment. Areas that were previously designated as nonattainment areas but subsequently meet the standard may be officially redesignated to attainment by the U.S. Environmental Protection Agency and are then called "maintenance" areas. Hot spot analysis is essentially the same, for technical purposes, as carbon monoxide or particulate matter analysis performed for National Environmental Policy Act purposes. Conformity does include some specific procedural and documentation standards for projects that require a "hot-spot" analysis. In general, projects must not cause the hot spot-related standard to be violated and must not cause any increase in the number and severity of violations in non-attainment areas. 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) as well.

Affected Environment

Information in this section comes from the *Air Quality Study Report* (November 2013) for the project. Detailed analysis methodology, modeling files, and calculation worksheets can be found in the *Air Quality Study Report*. A climate change discussion is provided in Section 4.5.

Climate and Meteorology

The project study area lies in western Kern County, an area within the San Joaquin Valley Air Basin. The air basin is bordered by the Sierra Nevada Mountains on the east, the Pacific Coast Range on the west, and the Tehachapi Mountains on the south; the basin is open to the north extending to the Sacramento Valley Air Basin.

Air quality is affected by climate, topography, and the types and amount of pollutants emitted. The climate in Bakersfield is typical of the southern basin area, with hot dry summers and cooler winters characterized by dense tule fog.

In summer, the average high temperature is about 97 degrees Fahrenheit, and the average low temperature is about 68 degrees Fahrenheit. The wind in the summer is thermally driven by rising air in the Mojave Desert; wind flows in a northwesterly direction through the valley, the Tehachapi Pass and into the Mojave Desert.

In winter, the average high temperature is about 59 degrees Fahrenheit, and the average low temperature is about 43 degrees Fahrenheit. In addition to ambient temperatures, factors affecting ambient air quality include wind direction and speed, as well as atmospheric stability. This pattern is affected by mountain ranges and valleys.

The precipitation in winter in the southern basin is influenced by Pacific storms; there is little or no precipitation in summer. About 90 percent of the precipitation in the area occurs between December and April.

The basin has persistent temperature inversions, which limit vertical dispersion of air pollutants and result in stagnant air. During summer, inversion periods can promote

the formation of ozone. In winter, steep inversion layers typically set up after a cold front passes, forming what is referred to as a "tule fog." This fog can last for days and, under stagnant conditions, can promote a buildup of particulates or carbon monoxide.

Attainment Status

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 to protect public health and prevent degradation of the environment. The standards for these pollutants are shown in Table 3.23.

Table 3.23 State and Federal Criteria Air Pollutant Standards

Pollutant	Averaging Time	State [8] Standard	Federal [8] Standard	Principal Health and Atmospheric Effects	Typical Sources	Project Area Attainment Status
Ozone (O_3) [2]	1 hour 8 hours	0.09 ppm 0.070 ppm	--- [4] 0.075 ppm (4th highest in 3 years)	High concentrations irritate lungs. Long-term exposure may cause lung tissue damage and cancer. Long-term exposure damages plant materials and reduces crop productivity. Precursor organic compounds include many known toxic air contaminants. Biogenic VOC may also contribute.	Low-altitude ozone is almost entirely formed from reactive organic gases/ volatile organic compounds (ROG or VOC) and nitrogen oxides (NOx) in the presence of sunlight and heat. Common precursor emitters include motor vehicles and other internal combustion engines, solvent evaporation, boilers, furnaces, and industrial processes.	**Federal:** *1 Hour* – Not applicable *8 Hour* – Extreme Non-attainment **State:** *1 Hour* – Severe Non-attainment *8 Hour* – Non-attainment
Carbon Monoxide (CO)	1 hour 8 hours 8 hours (Lake Tahoe)	20 ppm 9.0 ppm [1] 6 ppm	35 ppm 9 ppm ---	CO interferes with the transfer of oxygen to the blood and deprives sensitive tissues of oxygen. CO also is a minor precursor for photochemical ozone. Colorless, odorless.	Combustion sources, especially gasoline-powered engines and motor vehicles. CO is the traditional signature pollutant for on-road mobile sources at the local and neighborhood scale.	**Federal:** Attainment/ Maintenance **State:** Attainment/ Unclassified
Respirable Particulate Matter (PM_{10}) [2]	24 hours Annual	50 µg/m^3 20 µg/m^3	150 µg/m^3 --- [2] (expected number of days above standard < or equal to 1)	Irritates eyes and respiratory tract. Decreases lung capacity. Associated with increased cancer and mortality. Contributes to haze and reduced visibility. Includes some toxic air contaminants. Many toxic and other aerosol and solid compounds are part of PM_{10}.	Dust- and fume-producing industrial and agricultural operations; combustion smoke and vehicle exhaust; atmospheric chemical reactions; construction and other dust-producing activities; unpaved road dust and re-entrained paved road dust; natural sources.	**Federal:** *24 Hour* – Attainment/ Maintenance *Annual* – Not applicable **State:** *24 Hour & Annual* –Non-attainment

Table 3.23 State and Federal Criteria Air Pollutant Standards

Pollutant	Averaging Time	State [8] Standard	Federal [8] Standard	Principal Health and Atmospheric Effects	Typical Sources	Project Area Attainment Status
Fine Particulate Matter ($PM_{2.5}$) [2]	24 hours Annual 24 hours (conformity process [5]) Secondary Standard (annual; also for conformity process [5])	--- 12 µg/m^3 --- ---	35 µg/m^3 12.0 µg/m^3 65 µg/m^3 15 µg/m^3 (98th percentile over 3 years)	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and produces surface soiling. Most diesel exhaust particulate matter – a toxic air contaminant – is in the $PM_{2.5}$ size range. Many toxic & other aerosol and solid compounds are part of $PM_{2.5}$.	Combustion including motor vehicles, other mobile sources, and industrial activities; residential and agricultural burning; also formed through atmospheric chemical and photochemical reactions involving other pollutants including NOx, sulfur oxides (SOx), ammonia, and ROG.	**Federal:** Non-attainment **State:** Non-attainment
Nitrogen Dioxide (NO_2)	1 hour Annual	0.18 ppm 0.030 ppm	0.100 ppm [6] (98th percentile over 3 years) 0.053 ppm	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown. Contributes to acid rain and nitrate contamination of stormwater. Part of the "NOx" group of ozone precursors.	Motor vehicles and other mobile or portable engines, especially diesel; refineries; industrial operations.	**Federal:** Attainment/ Unclassified **State:** Attainment
Sulfur Dioxide (SO_2)	1 hour 3 hours 24 hours	0.25 ppm --- 0.04 ppm	0.075 ppm [7] (99th percentile over 3 years) 0.5 ppm [9]	Irritates respiratory tract; injures lung tissue. Can yellow plant leaves. Destructive to marble, iron, steel. Contributes to acid rain. Limits visibility.	Fuel combustion (especially coal and high-sulfur oil), chemical plants, sulfur recovery plants, metal processing; some natural sources like active volcanoes. Limited contribution possible from heavy-duty diesel vehicles if ultra-low sulfur fuel not used.	**Federal and State:** Attainment
Lead (Pb)[3]	Monthly Rolling 3-month average	1.5 µg/m^3 ---	--- 0.15 µg/m^3 [11]	Disturbs gastrointestinal system. Causes anemia, kidney disease, and neuromuscular and neurological dysfunction. Also a toxic air contaminant and water pollutant.	Lead-based industrial processes like battery production and smelters. Lead paint, leaded gasoline. Aerially deposited lead from older gasoline use may exist in soils along major roads.	**Federal:** Attainment **State:** Attainment

Table 3.23 State and Federal Criteria Air Pollutant Standards

Pollutant	Averaging Time	State [8] Standard	Federal [8] Standard	Principal Health and Atmospheric Effects	Typical Sources	Project Area Attainment Status
Sulfate	24 hours	25 µg/m^3	---	Premature mortality and respiratory effects. Contributes to acid rain. Some toxic air contaminants attach to sulfate aerosol particles.	Industrial processes, refineries and oil fields, mines, natural sources like volcanic areas, salt-covered dry lakes, and large sulfide rock areas.	**State Only:** Attainment (entire state)
Hydrogen Sulfide (H_2S)	1 hour	0.03 ppm	---	Colorless, flammable, poisonous. Respiratory irritant. Neurological damage and premature death. Headache, nausea. Strong odor.	Industrial processes such as: refineries and oil fields, asphalt plants, livestock operations, sewage treatment plants, and mines. Some natural sources like volcanic areas and hot springs.	**State Only:** Attainment
Visibility Reducing Particles (VRP)	8 hours	Visibility of 10 miles or more (Tahoe: 30 miles) at relative humidity less than 70%	---	Reduces visibility. Produces haze. Note: Not directly related to the Regional Haze program under the Federal Clean Air Act, which is oriented primarily toward visibility issues in National Parks and other "Class I" areas. However, some issues and measurement methods are similar.	See particulate matter above. May be related more to aerosols than to solid particles.	**State Only:** Attainment
Vinyl Chloride[3]	24 hours	0.01 ppm	---	Neurological effects, liver damage, cancer. Also considered a toxic air contaminant.	Industrial processes	**State Only:** Unclassified (entire state)

Notes: ppm = parts per million; µg/m^3 = micrograms per cubic meter; ppb=parts per billion (thousand million)

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

2 Annual PM_{10} National Ambient Air Quality Standards revoked October 2006; was 50 µg/m^3. 24-hr. $PM_{2.5}$ National Ambient Air Quality Standards tightened October 2006; was 65 µg/m^3. Annual $PM_{2.5}$ National Ambient Air Quality Standards tightened from 15 µg/m^3 to 12 µg/m^3 December 2012 and secondary annual standard set at 15 µg/m^3.

3 The Air Resources Board has identified vinyl chloride and the particulate matter fraction of diesel exhaust as toxic air contaminants. Diesel exhaust particulate matter is part of PM_{10} and, in larger proportion, $PM_{2.5}$. Both the ARB and U.S. Environmental Protection Agency have identified lead and various organic compounds that are precursors to ozone and $PM_{2.5}$ as toxic air contaminants. There are no exposure criteria for adverse health effect due to toxic air contaminants, and control requirements may apply at ambient concentrations below any criteria levels specified above for these pollutants or the general categories of pollutants to which they belong.

4 Prior to 6/2005, the 1-hour ozone National Ambient Air Quality Standards was 0.12 ppm. Emission budgets for 1-hour ozone are still be in use in some areas where 8-hour ozone emission budgets have not been developed, such as the S.F. Bay Area.

5 The 65 µg/m^3 $PM_{2.5}$ (24-hr) National Ambient Air Quality Standards was not revoked when the 35 µg/m^3 National Ambient Air Quality Standards was promulgated in 2006. The 15 µg/m^3 annual $PM_{2.5}$ standard was not revoked when the 12 µg/m^3 standard was promulgated in 2012. The 0.08 ppm 1997 ozone standard is revoked for conformity purposes only when area designations for the 2008 0.75 ppm standard become effective for conformity use (7/20/2013). Conformity requirements apply for all National Ambient Air Quality Standards, including revoked National Ambient Air Quality Standards, until emission budgets for newer National Ambient Air Quality Standards are found adequate, State Implementation Plan amendments for the newer National Ambient Air Quality Standards are approved with a emission budget, U.S. Environmental Protection Agency specifically revokes conformity requirements for an older standard, or the area becomes attainment/unclassified. State Implementation Plan-approved emission budgets remain in force indefinitely unless explicitly replaced or eliminated by a subsequent approved State Implementation Plan amendment. During the "Interim" period prior to availability of emission budgets, conformity tests may include some combination of build vs. no build, build vs. baseline, or compliance with prior emission budgets for the same pollutant.

6 Final 1-hour NO_2 National Ambient Air Quality Standards published in the Federal Register on 2/9/2010, effective

Table 3.23 State and Federal Criteria Air Pollutant Standards

Pollutant	Averaging Time	State [8] Standard	Federal [8] Standard	Principal Health and Atmospheric Effects	Typical Sources	Project Area Attainment Status

3/9/2010. Initial area designation for California (2012) was attainment/unclassifiable throughout. Project-level hot spot analysis requirements do not currently exist. Near-road monitoring starting in 2013 may cause redesignation to nonattainment in some areas after 2016.

7 U.S. Environmental Protection Agency finalized a 1-hour SO_2 standard of 75 ppb in June 2010. Nonattainment areas have not yet been designated as of 9/2012.

8 State standards are "not to exceed" or "not to be equaled or exceeded" unless stated otherwise. Federal standards are "not to exceed more than once a year" or as described above.

9 Secondary standard, set to protect public welfare rather than health. Conformity and environmental analysis address both primary and secondary National Ambient Air Quality Standards.

10 Standards no longer apply in California starting in 2013 (1 year after designations to attainment/unclassified statewide) were completed. Do not use or quote any more. Will be removed in 2013 edition of this table.

11 Lead National Ambient Air Quality Standards are not considered in Transportation Conformity analysis.

Greenhouse Gases and Climate Change:

Greenhouse gases do not have concentration standards for that purpose. Conformity requirements do not apply to greenhouse gases.

Source: Developed from the *Air Quality Study Report* 2013.

The basin is currently designated as a federal non-attainment area for ozone and particulate matter equal to or less than 2.5 microns in diameter ($PM_{2.5}$) and a maintenance area for inhalable particulate matter less than 10 microns in diameter (PM_{10}); the basin is subject to conformity requirements for these pollutants.

The project area is within the jurisdiction of the San Joaquin Valley Air Pollution Control District and the Kern Council of Governments. The San Joaquin Valley Air Pollution Control District implemented a 2007 Ozone Plan for 8-hour ozone. Based on the plan, the project area in Bakersfield will reach attainment in 2020.

Transportation conformity for ozone is demonstrated by the project being listed in the currently conforming RTP and TIP. The Centennial Corridor project is in the 2011 Regional Transportation Plan Amendment 3 (Project Identification Number KER08RTP020). The Kern Council of Governments adopted the 2011 plan on July 19, 2012. The Federal Highway Administration and Federal Transit Administration made a conformity finding for the 2011 plan on December 13, 2012. Segments 1 and 2 of the Centennial Corridor project are in the Kern Council of Governments' 2013 Federal Transportation Improvement Program, which was federally approved on December 13, 2012 (Project Identification Number KER050104).

The San Joaquin Valley Air Pollution Control District 2012 Attainment Plan for the 2006 $PM_{2.5}$ standard (24-hour average $PM_{2.5}$ = 35 $\mu g/m^3$) was adopted by the district on December 20, 2012 and was approved by the California Air Resources Board on January 24, 2013. Approval by the Environmental Protection Agency is pending. According to this plan, the 24-hour fine particulate matter ($PM_{2.5}$) standard of 35 micrograms per cubic meter will be achieved by 2019 (with approval of the 5-year extension of the 2014 deadline). The project is within a federal nonattainment area for fine particulate matter ($PM_{2.5}$) and in a maintenance area for inhalable particulate matter (PM_{10}).

Local Ambient Air Quality

The California Air Resources Board and the San Joaquin Valley Air Pollution Control District maintain a network of air quality monitoring stations located throughout the Basin. The nearest most representative air monitoring station to the project site is the Bakersfield-California Avenue Station, located at 5558 California Avenue, which is west of the project alignments. The monitoring station distance is about 0.2 mile, 0.6 mile, and 1.1 mile from the Alternatives A, B, and C alignments, respectively. All criteria pollutants are monitored at this station (i.e., O_3, CO, NO_2, SO_2, PM_{10}, and $PM_{2.5}$). Table 3-24 presents ambient air quality data, which was recorded at this station, for the past 4 years. Table 3-24 shows the following trend in local ambient criteria pollutant concentrations:

- Ozone – The maximum 1-hour ozone concentration recorded during the 2007 to 2011 period was 0.127 ppm. During this period, the California standard of 0.09 ppm was exceeded between 4 to 16 times annually, with the highest number of exceedances recorded in 2009. The 8-hour O_3 standards, for both national and state standards were exceeded every year and the highest number of exceedances occurred in 2008.
- Respirable Particulate Matter (PM_{10}) – During the recorded period of 2007 to 2011, the maximum 24-hour monitored data were below the NAAQS, with the exception of 2008. In 2008, the highest 24-hour concentration recorded was 196 $\mu g/m^3$. The exceedance was recorded only once; the second high measured concentration in 2008 was 128 $\mu g/m^3$, which is below the standard level.
- Fine Particulate Matter ($PM_{2.5}$) – During the recorded period of 2007 to 2011, the 3-year average of 98th percentile of 24-hour concentrations exceeded the 2006 NAAQS every year. The annual mean $PM_{2.5}$ concentration exceeded the national ambient air quality standard every year except in 2010 and 2011. Although the recorded data do not show a consistent trend, they do indicate an overall declining trend for ambient $PM_{2.5}$ concentrations in the project area.

Table 3- 24 Criteria Air Pollutants Data Summary (California Avenue Monitoring Station)

Pollutant	Averaging Time	Standard	2007	2008	2009	2010	2011
Ozone (O_3)	1-Hour	Maximum Concentration (ppm)	0.117	0.127	0.120	0.109	0.107
		Days > CAAQS (0.09 ppm)	4	15	16	8	5
	8-Hour	4th Maximum Concentration (ppm)[a]	0.085	0.101	0.086	0.093	0.087
		Days > NAAQS (0.075 ppm)	**25**	**40**	**34**	**28**	**25**
		Days > CAAQS (0.07 ppm)	49	60	58	48	51
Particulate Matter (PM_{10})	24-Hour	Maximum Concentration ($\mu g/m^3$)	115	262	95	86	97
		Days > CAAQS (50 $\mu g/m^3$)	130	170	84	47	116
		Days > NAAQS (150 $\mu g/m^3$)	0	**3**	0	0	0
	Annual	State Annual Average (20 $\mu g/m^3$)	49	55	41	33	n/a

Table 3- 24 Criteria Air Pollutants Data Summary (California Avenue Monitoring Station)

Pollutant	Averaging Time	Standard	2007	2008	2009	2010	2011
Particulate Matter ($PM_{2.5}$)	24-Hour	Maximum Concentration (μg/m^3)	86	99	196	92	53
		Days > NAAQS (35 μg/m^3)	n/a	**67**	**46**	**29**	n/a
		National Std. 98th Percentile [b]	73	65	67	53	38
	Annual	National Annual (15.0 μg/m^3)	**21.9**	**21.9**	**19.0**	14.1	13.1
Carbon Monoxide [c] (CO)	1-Hour	Maximum Concentration (ppm)	2.8	3.5	2.2	2.1	n/a
		Days > CAAQS (20 ppm)	0	0	0	0	0
		Days > NAAQS (35 ppm)	0	0	0	0	0
	8-Hour	Maximum Concentration (ppm)	1.97	2.17	1.51	1.34	n/a
		Days > CAAQS (9.0 ppm)	0	0	0	0	0
Nitrogen Dioxide (NO_2)	1-hour	Maximum Concentration (ppm)	0.072	0.083	0.069	0.079	0.064
		Days > CAAQS (0.18 ppm)	0	0	0	0	0
	Annual	Arithmetic Average (0.053 ppm)	0.017	0.016	0.016	0.014	0.015

AAM – Annual Arithmetic Mean; CAAQS – California ambient air quality standards; μg/m^3 – micrograms per cubic meter; NAAQS – National ambient air quality standards; ppm – parts per million; n/a – sufficient data not available to determine the value

The estimated number of measured concentrations above national standards are shown in **bold**.

Note: Ambient data for SO_2 and airborne lead are not included in this table since the Basin is currently in compliance with state and federal standards for these pollutants.

[a] The 8-hour ozone standard is attained when the fourth highest concentration in a year, averaged over 3 years, is equal to or less than the new national standard of 0.075 ppm (effective May 27, 2008).

Values listed in the table represent midnight-to-midnight 24-hour averaged and may be related to an exceptional event.

[b] Attainment condition for $PM_{2.5}$ is that the 3-year average of the 98th percentile of 24-hour concentrations at each monitor within an area must not exceed the standard (65 μg/m^3 at the time of monitoring).

[c] Carbon monoxide concentrations have not been measured at the California station since 2005; the listed data are from the Golden State Monitoring Station located at 1128 Golden State Highway, about 2.7 miles northeast of Alternative A, 2.2 miles northeast of Alternative B, and 2 miles northeast of Alternative C alignment.

Source: *Air Quality Study Report* 2013.

Mobile Sources Air Toxics

Controlling air toxics emissions became a national priority with passage of the Clean Air Act Amendments, whereby Congress mandated that the U.S. Environmental Protection Agency regulate 188 identified air toxics, also known as hazardous air pollutants. Mobile source air toxics are a subset of the 188 air toxics. The agency identified seven compounds that have significant contributions from mobile sources (Federal Highway Administration 2006) that are among the national and regional-scale cancer risk drivers from their 1999 National Air Toxics Assessment (see the following website for more information: http://www.epa.gov/ttn/atw/nata1999/). The priority mobile source air toxics are acrolein, benzene, 1,3-butadiene, diesel particulate matter plus diesel exhaust organic gases, formaldehyde, naphthalene, and polycyclic organic matter. While the Federal Highway Administration currently considers these to be the priority mobile source air toxics, the list is subject to change and may be adjusted in consideration of future U.S. Environmental Protection Agency rules. Of these seven pollutants, diesel particulate matter, 1,3-butadiene, and

benzene account for about 89 percent of the total toxic air pollutants responsible for potential excess cancer risk. Diesel particulate matter accounts for 71.2 percent of the total toxic air pollutants producing potential excess cancer risk. The Federal Highway Administration released interim guidance on February 3, 2006 to determine when and how to address mobile source air toxics impacts in the National Environmental Policy Act process for transportation projects. The guidance document was updated on September 30, 2009 (Federal Highway Administration 2009). The Federal Highway Administration has identified three levels of analysis:

- No analysis for exempt projects or projects with no potential for meaningful mobile source air toxics effects.
- Qualitative analysis for projects with low potential mobile source air toxics effects.
- Quantitative analysis to differentiate alternatives for projects with higher potential mobile source air toxics effects.

The Centennial Corridor project best fits into the last category. For projects warranting mobile source air toxics analysis, the seven priority mobile source air toxics should be analyzed.

Based on Federal Highway Administration guidance, the Centennial Corridor project is a project with higher potential mobile source air toxics effects. This category includes projects that have the potential for meaningful differences among project alternatives. Only a limited number of projects meet this two-pronged test. To fall into this category, projects must:

- Create or significantly alter a major intermodal freight facility that has the potential to concentrate high levels of diesel particulate matter in a single location, or
- Create new or add significant capacity to urban highways such as interstates, urban arterials, or urban collector-distributor routes with traffic volumes where the annual average daily traffic is projected to be in the range of 140,000 to 150,000 or greater by the design year, and
- Be located near populated areas or in rural areas near concentrations of vulnerable populations (i.e., schools, nursing homes, hospitals).

The Centennial Corridor project meets the second and third criteria above.

Several studies have concluded that mobile sources (i.e., on-road and non-road combined) are responsible for most of the excess cancer risk associated with exposure to urban air toxics. While much work has been done to assess the overall health risk of air toxics, many questions remain unanswered. Currently, the tools and techniques for assessing project-specific health impacts from mobile source air toxics are limited.

Furthermore, neither the U.S. Environmental Protection Agency nor the California Air Resources Board have established regulatory concentration targets for the seven relevant mobile source air toxics for use in the project development process. For the same reason, states are not required to achieve an identified level of air toxics in the ambient air or to identify air toxics reduction measures in the State Implementation Plan. Developing strategies for reducing mobile source air toxics is a cooperative effort between federal and local authorized agencies.

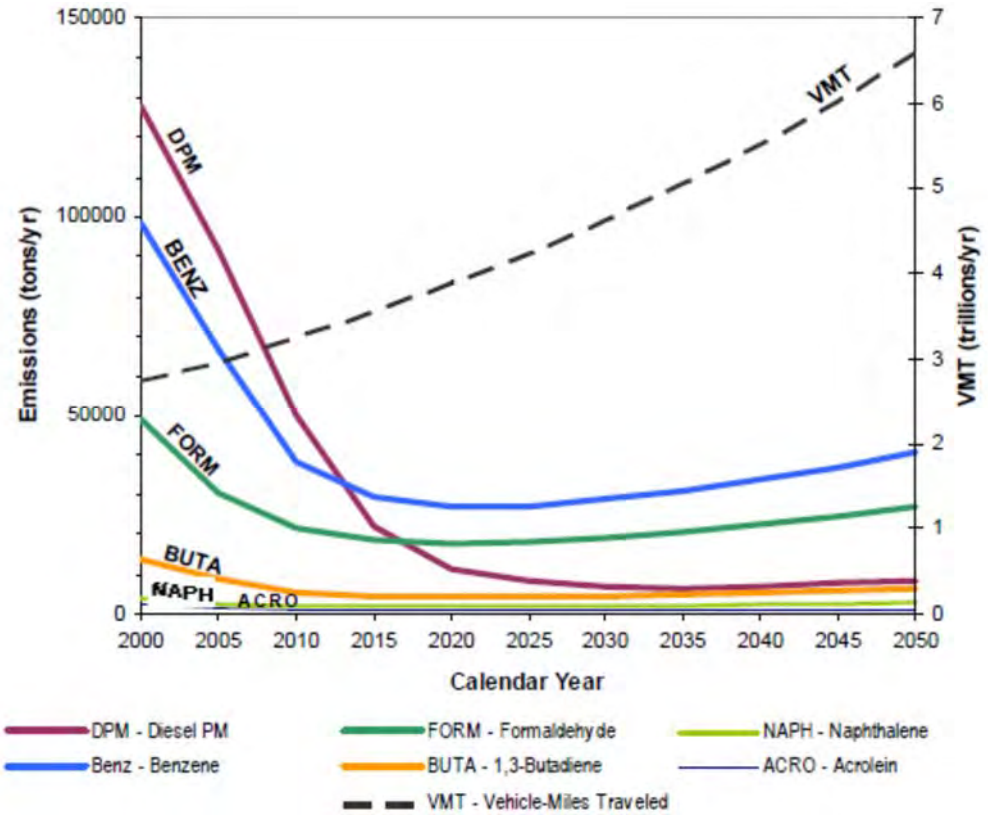
The Clean Air Act provides the U.S. Environmental Protection Agency with the authority to establish and regulate emission standards for engines and vehicles. The State of California also has certain rights to adopt its own emission regulations, which are often more stringent than the federal rules. To reduce mobile source emissions, mandatory and incentive-based programs have been developed in conjunction with new engine emission regulations; additional emission testing requirements (i.e., supplemental emission test, not-to-exceed limits); and limiting fuel sulfur content. These programs are implemented by all levels of government: federal, state, and local. Currently, the Federal Highway Administration's interim guidance update is used to analyze potential impacts of mobile source air toxics to be included in environmental documents.

The 2007 U.S. Environmental Protection Agency rule requires controls that will dramatically decrease mobile source air toxics emissions through cleaner fuels and cleaner engines. According to an analysis done by the Federal Highway Administration, using the U.S. Environmental Protection Agency's MOBILE 6.2 emission factors model, even if vehicle activity (vehicle miles traveled) increases by 145 percent as assumed, a combined reduction of 72 percent in the total annual emission rate for the priority mobile source air toxics is projected from 1999 to 2050, as shown in Figure 3-31.

California's vehicle emission control and fuel standards are more stringent than federal standards and are effective sooner, so the effect of combined state and federal regulations is expected to result in greater reduction of mobile source air toxics earlier than the Federal Highway Administration analysis predicts.

Based on the Federal Highway Administration's tiered approach in its interim guidance document, the project would be considered to have potential effects from mobile source air toxics emissions. The following analysis provides an assessment of the project's local effects from mobile source air toxics emissions. The analysis used projected traffic data, including peak and off-peak roadway traffic volumes and vehicle miles traveled, fleet mix, traffic diversion data, average speed, and associated changes in air toxics emissions from project alternatives.

Figure 3-31 National Mobile Source Air Toxic Emissions Trend, 1999 – 2050 for Vehicles Operating on Roadways



Notes: *(1) Projected data were estimated using the EPA's MOBILE 6.2 Model run August 20, 2009.*

(2) Annual emissions of polycyclic organic matter are projected to be 561 tons/yr for 1999, decreasing to 373 tons/yr for 2050.

(3) Trends for specific location may be different depending on locally derived information representing vehicle miles traveled, vehicle speeds, vehicle mix, fuels, emission control programs, methodology, and other factors.

Source: Federal Highway Administration, 2009

Information for Project-Specific Mobile Source Air Toxics Impact Analysis

Available technical tools do not enable reliable predictions of the project-specific health impacts of the emission changes associated with the alternatives in this environmental document. Due to these limitations, the following discussion is included in accordance with the Council on Environmental Quality regulations (40 CFR 1502.22[b]) on incomplete or unavailable information.

Information that is Unavailable or Incomplete

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 a final determination of health impacts based on the estimated exposure. Each of these steps is encumbered by technical shortcomings or uncertain

science that prevents a more complete determination of the mobile source air toxic health impacts of this project.

Exposure Levels and Health Effects

Shortcomings in current techniques for exposure assessment and risk analysis do not permit reaching meaningful conclusions about project-specific health impacts. Exposure assessments are difficult because it is difficult to accurately calculate annual concentrations of mobile source air toxics near roadways and to determine the portion of a year that people are actually exposed to those concentrations at a specific location. These difficulties are magnified for 70-year cancer assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over a 70-year period. There are also considerable uncertainties associated with the existing estimates of toxicity of the various mobile source air toxics because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population. Because of these shortcomings, any calculated difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with calculating the impacts. Consequently, the results of such assessments would not be useful to decision-makers, who would need to weigh this information against other project impacts that are better suited for quantitative analysis.

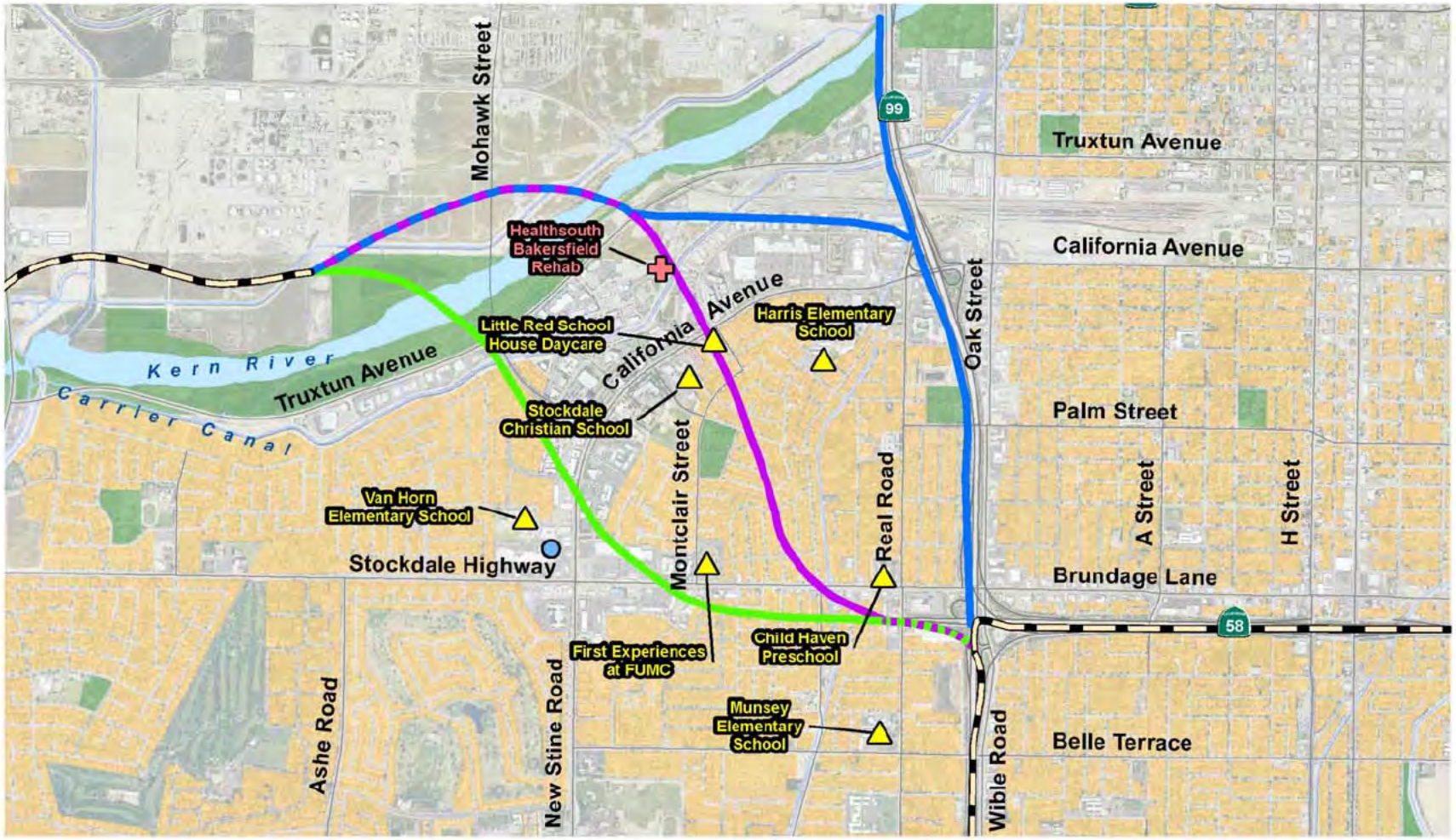
Summary of Existing Credible Scientific Evidence Relevant to Evaluating the Impacts of Mobile Source Air Toxics

Research into the health impacts of mobile source air toxics is ongoing. For different emission types, various studies show that some are either statistically associated with adverse health outcomes through epidemiological studies (frequently based on emissions levels found in occupational settings) or that animals have adverse health outcomes when exposed to large doses. Exposure to toxics has been a focus of numerous U.S. Environmental Protection Agency efforts. Most notably, the agency's National Air Toxics Assessment in 1996 evaluated modeled estimates of human exposure at the county level. While not intended as a measure of or benchmark for local exposure, modeled estimates in the National Air Toxics Assessment database best show the levels of various toxics when aggregated to a national or state level.

In California, the South Coast Air Quality Management District did a comprehensive study on air toxics for the South Coast Air Basin (SCAQMD 2000, 2008). These studies identified particulate emissions, attributed mostly to diesel engines, as an important cancer risk factor. According to the studies, diesel particulate matter accounted for about 84 percent of the total cancer risk associated with the studied group of air pollutants. The studies also provided regional trends in estimated outdoor cancer risk from air toxics emissions.

Sensitive Receptors

Segment 1 of the Centennial Corridor is in an area of mixed land use. Figure 3-32 shows the sensitive receptors in the Segment 1 alternative study area.



N

Segment 1

- Alternative A
- Alternative B
- Alternative C
- Shared by Alternatives A/B
- Shared by Alternatives B/C
- Shared by Alternatives A/B/C

Sensitive Receptors

- Nearest Hospital
- Nearby School/Daycare
- Air Monitoring Station
- Residential Area
- Parks

Source: Information obtained from *Air Quality Study Report* 2013

Not To Scale

Air Quality Sensitive Receptors

Centennial Corridor, Kern County, California

D6-KERN-58 - PM T31.7 to PM R55.6

D6-KERN-99 - PM 21.2 to PM 26.2

Project ID# 06-0000-0484

Caltrans

Figure 3-32

Environmental Consequences

This section discusses long-term impacts on air quality in terms of regional air quality conformity and project-level conformity. Temporary impacts associated with construction of the project are addressed in Section 3.6, Construction Impacts.

Regional conformity and project-level conformity for the Westside Parkway (Segment 2) were analyzed in the *Westside Parkway Environmental Assessment/Final Environmental Impact Report.* Regional conformity was found, and no further analysis is required. Project-level conformity was also found. However, because connection with Segment 1 of the Centennial Corridor project would substantially increase traffic on the Westside Parkway (Segment 2), the project-level analyses addressed in the *Air Quality Study Report* (November 2013) prepared for this project extended west of Segment 1 into the Westside Parkway.

Analysis of Build Alternatives

Regional Air Quality Conformity

In determining whether a project conforms to an approved air quality plan, agencies must use current emission estimates based on the most recent population, employment, travel, and congestion estimates determined by the Kern Council of Governments. As the Metropolitan Planning Organization for the region, the Council of Governments is required to develop and maintain long-range plans and programs, such as 20-year Regional Transportation Plans and 4-year (or longer) Regional Transportation Improvement Programs that set out transportation policies and programs for the region. A conforming Regional Transportation Improvement Program model projects that the regulated pollutants will be reduced to acceptable levels within time frames that meet the National Ambient Air Quality Standards.

The proposed project is listed in the financially constrained 2011 Kern County Regional Transportation Plan, Amendment 3, which was found to conform by the Kern Council of Governments on July 19, 2012. The Federal Highway Administration and Federal Transportation Administration made a regional conformity determination on December 14, 2012. Segments 1 and 2 of the project are also included in the Kern Council of Governments 2013 Federal Transportation Improvement Program, which was determined to conform by the Federal Highway Administration and Federal Transportation Administration on December 14, 2012. The design concept and scope of the proposed project are consistent with the project description in the 2011 Regional Transportation Program, and the 2013 Federal Transportation Improvement Program, and the “open to traffic” assumptions of the Kern Council of Government’s regional emissions analysis.

Project-Level Conformity

The San Joaquin Valley Air Basin is designated as a non-attainment area for the following standards: federal and state ozone, federal and state fine particulate matter less than 2.5 microns in diameter ($PM_{2.5}$), and state inhalable particulate matter less than 10 microns in diameter (PM_{10}). The basin is designated as an attainment/ maintenance area for federal carbon monoxide and inhalable particulate matter

(PM_{10}) standards. Based on the federal attainment designations, a project-level transportation conformity determination is required for the project. Project-level transportation conformity was determined by hot spot analyses for carbon monoxide, inhalable particulate matter (PM_{10}), and fine particulate matter ($PM_{2.5}$).

To meet conformity requirements, a project-level hot spot analysis is required under the U.S. Environmental Protection Agency's Transportation Conformity Rule for projects of local air quality concern. Section 40 CFR 93.123(b)(1) of the Transportation Conformity Rule defines types of projects that are considered projects of local air quality concern, including the following:

- New or expanded highway projects that have a significant number of or significant increase in diesel vehicles.
- Projects affecting intersections that are at level of service D, E, or F with a significant number of diesel vehicles, or those that will change to level of service D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project.

The Centennial Corridor project falls within the category of new or expanded highway projects with a significant number of diesel vehicles. (The U.S. Environmental Protection Agency Guidance suggests that a project of air quality concern would be a project on a new highway or expressway that serves a significant volume of diesel truck traffic, such as facilities with greater than 125,000 annual average daily traffic, with 8 percent or more of such annual average daily traffic as diesel truck traffic.) The 2038 horizon year average annual daily traffic estimates, along segments of some of the study area roadways—including the Westside Parkway, State Route 58 and State Route 99—are projected to be above 150,000 vehicles. The average diesel truck percentage using State Route 99 and the Westside Parkway (when the construction is completed) within the project limits ranges (or will range, in Westside Parkway's case) from 17 to 24 percent. It is not expected that the vehicle fleet mix would change significantly in the future years. According to the traffic operations analysis, several intersections with level of service D, E, and F within the project limits would be affected. Therefore, the project would be considered as a project of local air quality concern.

Carbon Monoxide Hot Spot Analysis

Localized carbon monoxide impacts from the project alternatives were evaluated following the 1997 Caltrans guidance document titled *Transportation Project-Level Carbon Monoxide Protocol*. A quantitative hot spot analysis was done at 10 intersections that would have the highest traffic volume and the worst peak hour level of service (with level of service E or F) according to the *Traffic Study Report for the Centennial Corridor Project* (November 2012). The results are summarized in Section 3.1.6, Traffic and Transportation/Pedestrian and Bicycle Facilities, of this environmental document. The intersections were selected based on their proximity to residential sites and sensitive receptors.

Localized concentrations of carbon monoxide were estimated for existing conditions (2008), opening year (2018), and horizon year (2038) for each build alternative and for the No-Build Alternative using the CALINE4 dispersion model (developed by Caltrans), in conjunction with emission factors from the California Air Resources Board emission factor model EMFAC2007.

Background carbon monoxide concentrations were taken from the Bakersfield-California Avenue Monitoring Station at 5558 California Avenue, which is about 0.2 mile from the Alternative A alignment, about 0.6 mile from the Alternative B alignment, and about 1.1 mile from the Alternative C alignment (see Figure 3-32). Because the air basin is in a maintenance area for carbon monoxide standards, using the average ambient concentrations during the past four years at this monitoring station is appropriate for background concentrations for future years as well as the existing condition.

Results of localized carbon monoxide analysis for Alternative A, shown in Table 3.25, indicate that, for all analyzed intersections, future predicted carbon monoxide concentrations are expected to be less than the existing levels. These reductions, even with projected regional growth and increased traffic, are due to cleaner-burning fuels and improved vehicle emission standards.

All predicted concentrations are estimated to be less than 50 percent of the applicable standards. The modeled data show very little difference in the carbon monoxide concentrations, without or with the project. As Table 3.25 shows, the project would not have a considerable impact on 1-hour or 8-hour local carbon monoxide concentrations at the intersections with the highest traffic volumes. No substantial adverse effect is expected to occur at any other locations in the study area. The project would not contribute to a violation of standards, and project-level carbon monoxide conformity would be satisfied.

The modeled localized carbon monoxide concentrations for Alternatives A, B, and C are shown in Tables 3.25, 3.26, and 3.27, respectively. The results for all the alternatives are very similar and would not contribute to a violation of standards, and project-level carbon monoxide conformity would be satisfied.

Particulate Matter (PM) Hot Spot Analysis

The U.S. Environmental Protection Agency's Transportation Conformity Rule (40 CFR Parts 51.390 and Part 93, March 2012) addresses local air quality impacts in particulate matter (PM_{10} and $PM_{2.5}$) federal non-attainment and maintenance areas. The rule provides criteria and procedures to ensure that any such project will not cause or contribute to new violations, increase the frequency or severity of any existing violations, or delay the timely attainment of the relevant National Ambient Air Quality Standard as described in 40 CFR Part 93.101. In March 2006, the U.S. Environmental Protection Agency issued a guidance document with a methodology

Table 3.25 Localized Carbon Monoxide Concentrations – Alternative A

Intersection	Peak Hour	1-hour Concentration (parts per million)					8-hour Concentration (parts per million)				
		Base Year 2008	Opening Year 2018		Horizon Year 2038		Base Year 2008	Opening Year 2018		Horizon Year 2038	
			No-Build Alternative	Build Alternative	No-Build Alternative	Build Alternative		No-Build Alternative	Build Alternative	No-Build Alternative	Build Alternative
Coffee Road and Stockdale Highway	AM	8.2	4.5	4.5	4.1	4.1	4.79	2.83	2.83	2.62	2.62
	PM	7.4	4.7	4.8	4.3	4.2	4.44	2.97	3.04	2.76	2.69
Mohawk Street and California Avenue	AM	8.1	6.6	6.4	5.5	5.0	4.65	3.67	3.60	3.18	2.97
	PM	6.4	5.4	5.3	4.7	4.3	4.09	3.46	3.39	3.11	2.90
California Avenue and Stockdale Highway	AM	6.6	4.9	4.7	4.5	4.0	4.02	3.04	2.97	2.83	2.62
	PM	7.9	5.2	5.0	4.5	4.3	4.93	3.25	3.18	2.90	2.76
Chester Lane and California Avenue	AM	5.1	4.2	4.2	3.8	3.8	3.11	2.62	2.69	2.41	2.48
	PM	5.8	4.5	4.5	4.0	4.0	3.46	2.76	2.76	2.48	2.55
State Route 99 southbound Ramp and California Avenue	AM	6.1	4.7	4.7	4.1	4.1	3.74	2.83	2.90	2.62	2.62
	PM	7.2	5.0	5.2	4.2	4.4	4.30	3.11	3.18	2.69	2.76
Coffee Road and Rosedale Highway	AM	6.3	4.7	4.7	4.1	4.1	3.88	2.97	2.97	2.62	2.62
	PM	6.6	5.0	5.1	4.2	4.2	4.02	3.18	3.25	2.76	2.69
Stine Road and Stockdale Highway	AM	–*	5.0	4.3	4.4	3.8	–*	2.97	2.76	2.76	2.48
	PM	–*	5.3	4.7	4.6	4.1	–*	3.18	2.97	2.90	2.62
Real Road and Stockdale Highway	AM	8.8	5.8	4.5	4.6	3.9	4.30	3.18	2.76	2.76	2.48
	PM	8.9	5.9	4.8	4.7	4.1	4.44	3.25	2.83	2.83	2.55
Wible Road and White Lane	AM	6.3	4.5	4.6	4.0	4.0	3.81	2.83	2.83	2.55	2.55
	PM	6.7	4.8	4.8	4.1	4.1	4.02	2.97	3.04	2.62	2.62
H Street and Brundage Lane	AM	5.1	4.1	4.2	3.8	3.8	3.11	2.62	2.69	2.48	2.48
	PM	5.4	4.3	4.4	3.9	3.9	3.32	2.76	2.76	2.55	2.55
State Standard (parts per million)		20					9.0				
Federal Standard (parts per million)		35					9				

AM: morning peak hour; PM: afternoon peak hour.

* This is a future intersection that did not exist in the base year 2008.

Notes:

- Total carbon monoxide concentrations include background 1-hour and 8-hour concentrations of 3.3 and 2.2 parts per million, respectively, based on the maximum values recorded during the past 4 years at the California Street monitoring station. Model files are included in the November 2013 *Air Quality Study Report.*
- Emission factors were obtained using EMFAC2007 model and for winter (worst case for carbon monoxide exhaust emissions).
- Actual emissions would likely be smaller for certain roadways and the overall project than reported in this table because the predicted truck volumes on parts of the Westside Parkway and State Route 58 are smaller than those used in this analysis which represents the worst case.

Source: *Air Quality Study Report* 2013.

Table 3.26 Localized Carbon Monoxide Concentrations – Alternative B

Intersection	Peak Hour	1-hour Concentration (parts per million)					8-hour Concentration (parts per million)				
		Base Year 2008	Opening Year 2018		Horizon Year 2038		Base Year 2008	Opening Year 2018		Horizon Year 2038	
			No-Build Alternative	Build Alternative	No-Build Alternative	Build Alternative		No-Build Alternative	Build Alternative	No-Build Alternative	Build Alternative
Coffee Road and Stockdale Highway	AM	8.2	4.5	4.6	4.1	4.1	4.79	2.83	2.90	2.62	2.62
	PM	7.4	4.7	4.9	4.3	4.2	4.44	2.97	3.04	2.76	2.69
Mohawk Street and California Avenue	AM	8.1	6.6	6.3	5.5	5.0	4.65	3.67	3.60	3.18	2.97
	PM	6.4	5.4	5.3	4.7	4.3	4.09	3.46	3.39	3.11	2.83
California Avenue and Stockdale Highway	AM	6.6	4.9	4.7	4.5	4.0	4.02	3.04	2.97	2.83	2.62
	PM	7.9	5.2	5.0	4.5	4.2	4.93	3.25	3.18	2.90	2.76
Chester Lane and California Avenue	AM	5.1	4.2	4.2	3.8	3.8	3.11	2.62	2.69	2.41	2.48
	PM	5.8	4.5	4.5	4.0	4.0	3.46	2.76	2.76	2.48	2.48
State Route 99 southbound Ramp and California Avenue	AM	6.1	4.7	4.6	4.1	4.2	3.74	2.83	2.90	2.62	2.62
	PM	7.2	5.0	5.2	4.2	4.3	4.30	3.11	3.18	2.69	2.76
Coffee Road and Rosedale Highway	AM	6.3	4.7	4.7	4.1	4.1	3.88	2.97	2.97	2.62	2.69
	PM	6.6	5.0	5.1	4.2	4.2	4.02	3.18	3.18	2.76	2.69
Stine Road and Stockdale Highway	AM	–*	5.0	4.4	4.4	3.8	–*	2.97	2.76	2.76	2.48
	PM	–*	5.3	4.7	4.6	4.1	–*	3.18	2.90	2.90	2.62
Real Road and Stockdale Highway	AM	8.8	5.8	4.4	4.6	3.9	4.30	3.18	2.69	2.76	2.48
	PM	8.9	5.9	4.8	4.7	4.2	4.44	3.25	2.90	2.83	2.62
Wible Road and White Lane	AM	6.3	4.5	4.5	4.0	4.0	3.81	2.83	2.83	2.55	2.55
	PM	6.7	4.8	4.8	4.1	4.1	4.02	2.97	2.97	2.62	2.62
H Street and Brundage Lane	AM	5.1	4.1	4.2	3.8	3.8	3.11	2.62	2.69	2.48	2.48
	PM	5.4	4.3	4.5	3.9	3.9	3.32	2.76	2.83	2.55	2.55
State Standard (parts per million)		20					9.0				
Federal Standard (parts per million)		35					9				

AM: morning peak hour; PM: afternoon peak hour.

* This is a future intersection that did not exist in the base year 2008.

Notes:

- Total carbon monoxide concentrations include background 1-hour and 8-hour concentrations of 3.3 and 2.2 parts per million, respectively, based on the maximum values recorded during the past 4 years at the California Street monitoring station. Model files are included in the November 2013 *Air Quality Study Report.*
- Emission factors were obtained using EMFAC2007 model and for winter (worst case for carbon monoxide exhaust emissions).
- Actual emissions would likely be smaller for certain roadways and the overall project than reported in this table because the predicted truck volumes on parts of the Westside Parkway and State Route 58 are smaller than those used in this analysis which represents the worst case .

Source: *Air Quality Study Report* 2013.

Table 3.27 Localized Carbon Monoxide Concentrations – Alternative C

Intersection	Peak Hour	1-hour Concentration (parts per million)					8-hour Concentration (parts per million)				
		Base Year 2008	Opening Year 2018		Horizon Year 2038		Base Year 2008	Opening Year 2018		Horizon Year 2038	
			No-Build Alternative	Build Alternative	No-Build Alternative	Build Alternative		No-Build Alternative	Build Alternative	No-Build Alternative	Build Alternative
Coffee Road and Stockdale Highway	AM	8.2	4.5	4.6	4.1	4.1	4.79	2.83	2.90	2.62	2.62
	PM	7.4	4.7	4.7	4.3	4.2	4.44	2.97	2.97	2.76	2.69
Mohawk Street and California Avenue	AM	8.1	6.6	6.4	5.5	5.1	4.65	3.67	3.60	3.18	2.97
	PM	6.4	5.4	5.2	4.7	4.4	4.09	3.46	3.39	3.11	2.83
California Avenue and Stockdale Highway	AM	6.6	4.9	4.7	4.5	4.0	4.02	3.04	2.97	2.83	2.55
	PM	7.9	5.2	5.0	4.5	4.2	4.93	3.25	3.18	2.90	2.76
Chester Lane and California Avenue	AM	5.1	4.2	4.2	3.8	3.8	3.11	2.62	2.69	2.41	2.48
	PM	5.8	4.5	4.5	4.0	4.0	3.46	2.76	2.76	2.48	2.48
State Route 99 southbound Ramp and California Avenue	AM	6.1	4.7	4.5	4.1	4.0	3.74	2.83	2.90	2.62	2.62
	PM	7.2	5.0	5.1	4.2	4.3	4.30	3.11	3.18	2.69	2.76
Coffee Road and Rosedale Highway	AM	6.3	4.7	4.7	4.1	4.1	3.88	2.97	3.04	2.62	2.62
	PM	6.6	5.0	5.0	4.2	4.3	4.02	3.18	3.18	2.76	2.76
Stine Road and Stockdale Highway	AM	–*	5.0	4.4	4.4	3.9	–*	2.97	2.69	2.76	2.48
	PM	–*	5.3	4.8	4.6	4.1	–*	3.18	2.97	2.90	2.62
Real Road and Stockdale Highway	AM	8.8	5.8	5.2	4.6	4.2	4.30	3.18	2.97	2.76	2.62
	PM	8.9	5.9	5.3	4.7	4.4	4.44	3.25	3.11	2.83	2.69
Wible Road and White Lane	AM	6.3	4.5	4.5	4.0	4.0	3.81	2.83	2.83	2.55	2.55
	PM	6.7	4.8	4.7	4.1	4.1	4.02	2.97	2.97	2.62	2.62
H Street and Brundage Lane	AM	5.1	4.1	4.1	3.8	3.7	3.11	2.62	2.62	2.48	2.41
	PM	5.4	4.3	4.2	3.9	3.8	3.32	2.76	2.69	2.55	2.41
State Standard (parts per million)		20					9.0				
Federal Standard (parts per million)		35					9				

AM: morning peak hour; PM: afternoon peak hour.

* This is a future intersection that did not exist in the base year 2008.

Notes:

- Total carbon monoxide concentrations include background 1-hour and 8-hour concentrations of 3.3 and 2.2 parts per million, respectively, based on the maximum values recorded during the past 4 years at the California Street monitoring station. Model files are included in the November 2013 *Air Quality Study Report.*
- Emission factors were obtained using EMFAC2007 model and for winter (worst case for carbon monoxide exhaust emissions).
- Actual emissions would likely be smaller for certain roadways and the overall project than reported in this table because the predicted truck volumes on parts of the Westside Parkway and State Route 58 are smaller than those used in this analysis which represents the worst case.

Source: *Air Quality Study Report* 2013.

for qualitative particulate matter analysis. The qualitative analysis is required effective March 10, 2006. The qualitative analysis requires analysis based on the U.S. Environmental Protection Agency's Transportation Conformity Guidance for Qualitative Hot-spot Analyses in Particulate Matter (PM2.5 and PM10) Nonattainment and Maintenance Areas.

As of December 20, 2012, a quantitative particulate matter hot-spot analysis (dispersion modeling) is required by the U.S. Environmental Protection Agency. Since the Centennial Corridor Project environmental document review process was initiated in 2008 and the associated technical studies prepared as part of the environmental document, were conducted in 2011, the qualitative analysis is therefore appropriate for this project.

Methodology

The qualitative particulate matter hot spot analysis was conducted following the joint U.S. Environmental Protection Agency (EPA)/ Federal Highway Administration (FHWA) Transportation Conformity Guidance for Qualitative Hot Spot Analysis in particulate matter (PM_{10} and $PM_{2.5}$) nonattainment and maintenance areas dated March of 2006. As per the guidance, the project was analyzed for total emission burden of direct particulate matter (PM_{10} or $PM_{2.5}$) emissions which can be attributed to the implementation of the project (including re-entrained road dust). Roadway construction emissions were not included since the construction is anticipated to last less than the 5 year requirement (anticipated construction will last 3 years). The analysis encompassed all roadways (including local surface streets) that would be affected by the project. As mentioned previously the project is included in the current approved Regional Transportation Plan and Federal Transportation Improvement Program as required for a project-level conformity determination.

The U.S. Environmental Protection Agency and Federal Highway Administration established in the Transportation Conformity Guidance for Qualitative Hot-Spot Analyses in PM_{10} and $PM_{2.5}$ Nonattainment and Maintenance Areas (Federal Highway Administration and U.S. Environmental Protection Agency 2006) highlighted two of the following methods for completing a particulate matter (PM_{10} or $PM_{2.5}$) hot-spot analysis:

1. Comparison to another location with similar characteristics – (pollutant trend within the air basin)
2. Air quality studies for the proposed project location – (ambient particulate matter trend analysis in the project area)

The project level analysis uses a hybrid approach to demonstrate that the proposed project would not result in a new or worsened particulate matter (PM_{10} or $PM_{2.5}$) violation. Air data gathered from the local air district was used to establish the ambient particulate matter trend in proposed project area and will not delay attainment of the National Ambient Air Quality Standards. Documentation from the San Joaquin Valley Air District State Implementation Plan was referenced to establish the regional emissions trends for the project area.

In addition to meeting regional conformity requirements as demonstrated in the Regional Transportation Plan, the project is required to demonstrate that the project will not cause or contribute to any localized violations of particulate matter thresholds, or add to existing violations of the standard, or delay timely attainment of the relevant standard. As such, the project needed to be analyzed at the project level and broken down into more detailed emissions calculations. As the qualitative analysis evolved it became apparent that the example methodologies listed in the U.S. Environmental Protection Agency guidance would not adequately address the project level impacts with respect to this project. A methodology was derived using a quasi quantitative element that would use the U.S. Environmental Protection Agency approved EMFAC emissions model to compare the project alternatives to the no-build condition.

The analysis included the proposed Segment 1 alignment and also all major local surface streets that would be affected by the project. The following roadway segments and intersections were included in the analysis:

- State Route 58 – State Route 99 to Cottonwood
- State Route 99 – White Lane to State Route 204
- State Route 204 – State Route 99 to Union Road
- Segment 1 – Alternative A, B, and C
- Rosedale Highway – Allen Road to State Route 99
- Stockdale Highway – Allen Road to Oak Street
- Truxtun Avenue – Coffee Road to Oak Street
- Hageman Avenue – Allen Road to State Route 99
- Union Avenue – State Route 204 to State Route 58
- Ming Avenue – Allen Road to Union Road
- Real Road – State Route 58 to California Avenue
- California Avenue – Stockdale Highway to Oak Avenue
- Brundage Lane – Oak Avenue to Union Avenue
- Mohawk Street – California Avenue to Hageman Road
- Westside Parkway – West Beltway to State Route 99
- Allen Road – Ming Avenue to Hageman Road
- Calloway Drive – Ming Avenue to Hageman Road
- Coffee Road – Ming Avenue to Hageman Road
- Wible Road/Oak Street – Ming Avenue to 24th Street
- Off-/On-Ramps: State Route 99 from White Lane Road to State Route 204, State Route 58 from State Route 99 to Cottonwood Road, Westside Parkway from Allen Road to State Route 99
- Intersections: Rosedale Highway/Calloway Drive, Rosedale Highway/Coffee Road, Rosedale Highway/Mohawk Street, Mohawk Street/Truxtun Avenue, Mohawk Street/California Avenue, Stockdale Highway/California Avenue, California Avenue/Chester Lane, California Avenue, State Route 99 Southbound

Off-/On Ramps, Stockdale Highway Avenue/Stine Road, Stockdale Highway/Real Road, H Street/ State Route 58 Westbound Ramp, and H Street/ State Route 58 Eastbound Ramp

Each roadway listed above was subdivided into segments that were characterized by volume, speed, length, truck and car proportion. A total of 330 roadway segments were used to calculate emissions for the build and no-build conditions. This approach was utilized as a way to capture the entire project emissions along mainlines as well as local roadways. The emissions of each roadway segments were summed up to provide the total emissions.

The analysis compared future emissions (year 2038) for the horizon or design year of the No-Build Alternative to the three build alternatives. In addition, further analysis compared opening year (2018) emissions for Alternative B (the preferred alternative) to the No-Build Alternative. The emissions were calculated using the latest Environmental Protection Agency's approved emissions model -EMFAC 2011. There is an older version of EMFAC (EMFAC 2007); however, it was decided that to be more accurate with the project emissions the latest and recently updated EMFAC 2011 should be used. Since EMFAC 2011 does not provide emission factors beyond 2035, the 2035 emission factors were used with the 2038 traffic data to develop the 2038 emissions results.

Particulate Matter ($PM_{2.5}$ and PM_{10}) Emissions

Table 3.28 provides the sum total of tailpipe, brake wear, and tire wear of particulate matter ($PM_{2.5}$ and PM_{10}) emissions.

Table 3.28 Future Particulate Matter (PM_{10} and $PM_{2.5}$) Emission Reductions by Project Alternatives

Alternative	Existing (Lb/day)	Year 2018 (Lb/day)	Year 2018 % Emission Reduction when compared to No Build	Year 2038 (Lb/day)	Year 2038 % Emission Reduction when compared to No Build
Particulate Matter (PM_{10})					
No-Build	782.4	409.1		534.5	
Alternative A	--	Not calculated		467.1	-12.6%
Alternative B	--	407.6	-0.37%	534.3	-0.04%
Alternative C	--	Not calculated		503.0	-5.9%
Fine Particulate Matter ($PM_{2.5}$)					
No-Build	480.3	196.3		250.4	
Alternative A	--	Not calculated		217.4	-13.2%
Alternative B	--	195.5	-0.41%	246.1	-1.7%
Alternative C	--	Not calculated		233.7	-6.7%
Source: *Air Quality Study Report* 2013.					

Re-entrained Particulate Matter (PM_{10}) road dust was also considered. It was estimated based on the existing and projected traffic data; and was computed using the emission factor equations provided in the Fifth Edition, Volume I of the Environmental Protection Agency's AP-42 document dated November 1, 2006. As shown in Table 3.29, implementation of the proposed project is anticipated to result in reduction of re-entrained Particulate Matter (PM_{10}) road dust for Alternatives A and C, with a slight increase in Alternative B.

Table 3.29 PM_{10} Re-entrained Road Dust by Project Alternatives (Year 2038)

Alternative	Re-entrained Dust (lb/day)
No-Build	0.57
Alternative A	0.51
Alternative B	0.59
Alternative C	0.55
Source: *Air Quality Study Report* 2013.	

Summaries of particulate matter ($PM_{2.5}$ and PM_{10}) emissions in Table 3.28 indicate that the implementation of the project would result in reduction of particulate matter ($PM_{2.5}$ and PM_{10}) emissions when compared to the No-Build scenario. It should be noted that this reduction in the Build emissions has resulted despite its overall increase in the truck and total volumes along the Centennial Corridor within the project limits. Additionally, traffic data did not include increased idling times on the local streets that would occur without the project being built. Idling times would dramatically raise the particulate matter quantities for the No-Build with most concentrations added along Rosedale and Stockdale Highways.

Conformity Determination

As mentioned earlier, the project is contained in the approved Regional Transportation Plan and included in the regional emissions analysis that was used to meet regional conformity for the Kern County Area. Based upon the above analysis results, this project will not delay timely attainment of the particulate matter (PM_{10} or $PM_{2.5}$) National Ambient Air Quality Standards for the Kern County area.

As indicated in Tables 3.28 and 3.29, the project would result in lower particulate matter (PM_{10} and $PM_{2.5}$) emissions when compared to the No-Build scenario. This decrease in the particulate matter emissions is the result of increase in vehicle speeds and reduction of congestion anticipated with implementation of the project. As such the project will not cause any new particulate matter violations or worsen existing particulate matter violations in the project area. Activities of this project should, therefore, be considered consistent with the purpose of the State Implementation Plan and it should be determined that this project conforms to the requirements of the Clean Air Act.

Mobile Source Air Toxics

Mobile source air toxics emissions were estimated for each build alternative and the No-Build Alternative for the base year (2008), opening year (2018), and the horizon year (2038) along segments of the eight roadways studied in the project traffic study. Future year analysis compared alternatives, while the 2008 emissions were included to show the effect of current vehicle miles traveled and the degree of control plans on emissions of mobile source air toxics. Analysis was done for seven air toxics identified as priority mobile source air toxics by the U.S. Environmental Protection Agency. The EMFAC2011 model and latest version of the Caltrans' CT-EMFAC Model (Version 4.0 - Sonoma Technology, Inc. 2010) were used to estimate project-specific mobile source air toxics emissions. Detail about methodology and data used for analysis can be found in the *Air Quality Study Report* for the project.

The following roadway segments were included in the analysis:

- Rosedale Highway – between Allen Road and State Route 99
- Stockdale Highway – between Allen Road and H Street
- California Avenue – between Stockdale Highway and State Route 99
- Westside Parkway – between Allen Road and State Route 99 (note traffic volume does not exist on Westside Parkway for base year 2008)
- State Route 58 East – between State Route 99 and Cottonwood Road
- State Route 99 – between Airport Drive and White Lane
- Mohawk Street – between California Avenue and Rosedale Highway
- Real Road – between Stockdale Highway and California Avenue

Tables 3.30 and 3.31 present the estimated daily emissions of priority mobile source air toxics from analyzed roadways for opening year (2018) and horizon year (2038), respectively. Because the health impact of mobile source air toxics on humans in proximity to roadways is still under study, this quantitative analysis is provided only to compare different project alternatives. It should be noted that the results of calculation shown in these tables are conservative. Actual emissions would likely be less for most roadways and also the overall project because the number of roadway segments used for in the calculations is fewer than that used in the particulate matter hot-spot analysis described above. In addition, the predicted truck volumes and speeds on each roadway used in the model were higher than the traffic model results due to the averaging methodology used.

Table 3.30 Comparison of Mobile Source Air Toxics Emissions for Project Alternatives – Opening Year 2018

Roadway Scenario/ Alternative	Mobile Source Air Toxics Emissions (grams per day)						
	Benzene	1,3-Butadiene	Formaldehyde	Acrolein	Naphthalene	Polycyclic Organics	Diesel Particulate Matter[a]
Base Year (2008)	7,835	1,692	12,728	368	2,845	395	66,533
No-Build Alternative	3,577	730	7,606	153	1,211	168	31,948
Alternative A	3,743	768	7,797	162	1,244	173	31,115
Alternative B	3,864	793	8,042	167	1,297	180	32,332
Alternative C	3,848	788	8,098	165	1,319	183	33,257
Project increment (change from No-Build Alternative)							
Alternative A	**166**	**38**	**191**	**9**	**33**	**5**	-833
Alternative B	**287**	**63**	**436**	**14**	**86**	**12**	**384**
Alternative C	**270**	**58**	**492**	**12**	**108**	**15**	**1309**

[a] Diesel Particulate Matter includes emissions of inhalable particulate matter (PM_{10}) and total organic gases from diesel-powered vehicles traveling along the roadway.

Notes: Methodology and calculation worksheets are provided in the *Air Quality Study Report.*

The results of calculation shown in this table are conservative. Actual emissions would likely be less for most roadways and also the overall project because the number of roadway segments used in the calculations is fewer than that used in the particulate matter hot-spot analysis. In addition, the predicted truck volumes and speeds on each roadway used in the model were higher than the traffic model results due to the averaging methodology used.

Source: Developed from the *Air Quality Study Report* 2013.

Table 3.31 Comparison of Mobile Source Air Toxics Emissions for Project Alternatives – Horizon Year 2038

Roadway Scenario/ Alternative	Mobile Source Air Toxics Emissions (grams per day)						
	Benzene	1,3-Butadiene	Formaldehyde	Acrolein	Naphthalene	Polycyclic Organics	Diesel Particulate Matter[a]
Base Year (2008)	7,835	1,692	12,728	368	2845	395	66,533
No-Build Alternative	3,274	680	6,596	143	1,371	192	35,266
Alternative A	3,596	751	7,073	159	1,557	218	38,981
Alternative B	3,693	772	7,224	163	1,598	224	39,495
Alternative C	3,716	782	7,013	166	1,531	214	37,833
Project increment (change from No-Build Alternative)							
Alternative A	**322**	**71**	**477**	**16**	**186**	**26**	**3,715**
Alternative B	**419**	**92**	**628**	**20**	**227**	**32**	**4,229**
Alternative C	**442**	**102**	**417**	**23**	**160**	**22**	**2,567**

[a] Diesel Particulate Matter includes emissions of PM_{10} and total organic gases (TOG) from diesel-powered vehicles traveling along the roadway.

Notes: Methodology and calculation worksheets are provided in the *Air Quality Study Report.*

The results of calculation shown in this table are conservative. Actual emissions would likely be less for most roadways and also the overall project because the number of roadway segments used in the calculations is fewer than that used in the particulate matter hot-spot analysis. In addition, the predicted truck volumes and speeds on each roadway used in the model were higher than the traffic model results due to the averaging methodology used.

Source: Developed from the *Air Quality Study Report* 2013.

Based on the results of the mobile source air toxics emissions within the studied roadway, a significant decrease (on the order of 50 percent) in mobile source air toxics emissions can be expected for the project alternatives as compared with the

base year (2008) levels through future year levels. The decrease is expected to occur for all priority mobile source air toxics. This is directly due to the improved pollution emission performance of a modernizing fleet, including diesel-fueled vehicles, which is a trend that is expected to continue throughout the planning horizon. This finding is consistent with the Federal Highway Administration-projected trend, shown in Figure 3-31.

When comparing both the no-build and build alternatives between 2018 and 2038, the results are mixed. However, the results for 2038 are generally lower when compared to 2018 levels of benzene, 103 butadiene, formaldehyde, and acrolein, depending upon pollutant and alternative. For naphthalene, polycyclic organics, and diesel particulate matter, the emissions in 2038 would be higher than those in 2018.

The mobile source air toxics emissions from each build alternative would be less than the No-Build Alternative along several studied roadways. For most of the study area roadways, the three build alternatives are comparable in level of emissions, while Alternative A exhibits lower mobile source air toxics emissions than Alternatives B and C in the opening year and slightly lower emissions than Alternatives B and C in the horizon year. The mobile source air toxics emissions level of Alternatives B and C are in the same order of magnitude.

In summary, the U.S. Environmental Protection Agency projections indicate a continuing downward trend of all seven primary mobile source air toxics. Comparison of the data in Tables 3.30 and 3.31 indicates that, even with an increase in traffic volume (and vehicle miles traveled), the mobile source air toxics emissions are expected to decline from opening year to horizon year. Due to the comparably less detailed roadway network coverage used in the mobile source air toxics emissions calculation, the analysis shows a general increase in total emissions for the build alternatives compared to the No-Build Alternative. However, the 2038 data show a relatively small increase over the no-build emissions, even though the vehicle miles traveled increase would be considerable.

The study of mobile source air toxics, dose-response effects, and modeling tools are currently in a state where accurate information is incomplete or unavailable. This is relevant to making a viable prediction of any reasonably foreseeable adverse effects on the human environment. Studies are currently being done to clarify some of these unknowns; however, information is not yet available.

No-Build Alternative

The No-Build Alternative would not make any project improvements in Segment 1; however, Segment 2 (Westside Parkway) from Allen Road to Truxtun Avenue is now operational. Additionally, the final segment of the Westside Parkway (from Allen Road to Stockdale Highway) will be completed in 2014. Therefore, the operational consequences of Segment 2, in the absence of Segment 1, are considered as part of the No-Build Alternative. The regional and project-level conformity for the Westside Parkway under no Centennial Corridor Project were analyzed in the *Westside Parkway Environmental Assessment/Final Environmental Impact Report.* Regional

and project-level conformity were shown, and no further analysis is required. Operation of Segment 2 only was judged to not create a new violation or worsen an existing violation of the National Ambient Air Quality Standards for particulate matter PM_{10} or $PM_{2.5}$). However, this alternative is not consistent with regional goals and policies for congestion management and traffic condition improvement, and it would not be consistent with the projected regional growth and the local government goals and policies for reducing air quality emissions within its respective jurisdiction.

Avoidance, Minimization, and/or Mitigation Measures

Standard conditions to minimize short-term air quality impacts are noted in Section 3.6, Construction Impacts.

3.2.7 Noise

This section evaluates potential noise impacts on nearby frequent outdoor use areas as a result of Segment 1 alternative implementation pursuant to the National Environmental Policy Act requirements. Noise impacts pursuant to the California Environmental Quality Act are presented in Chapter 4 of this environmental document. Detailed cost analysis, including input and output data, is contained in the *Noise Study Report* (January 2013). Noise abatement in terms of soundwalls at various locations impacted by traffic noise levels is also provided with detailed analysis in the *Noise Abatement Decision Report* (May 2013) for this project. Construction noise and vibration impacts are discussed in Section 3.6 of this document.

At the time of the noise study analysis, Segment 2 of the Centennial Corridor project (Westside Parkway) was under construction. The Westside Parkway traffic noise impact analysis was done, and a *Noise Study Report* was issued in 2010. However, in anticipation of the Centennial Corridor project, truck percentages associated with the Centennial Corridor project were used in the traffic noise impact analysis and soundwalls recommended under the Westside Parkway analysis have been built at least 2 feet higher than needed for that project. Further details about Segment 2 are provided in the Westside Parkway sub-section of the *Environmental Consequences Under the National Environmental Policy Act*.

The Centennial Corridor project proposed no improvement within Segment 3 except for changes to one intersection. The Centennial Corridor project is proposing to widen and add signals to the Stockdale Highway and State Route 43 intersection. Besides five single-family residences along Stockdale Highway east of State Route 43 (Enos Lane), surrounding areas of this intersection consist of farmlands and open spaces. Proposed changes to the Stockdale Highway in front of these five single-family homes would be minimal, and there would be no noticeable change to the traffic noise levels at the frequent outdoor use areas associated with these houses. Therefore, traffic noise impacts were not evaluated for Segment 3.

Regulatory Setting

The National Environmental Policy Act and the California Environmental Quality Act provide the broad basis for analyzing and abating highway traffic noise effects. The intent of these laws is to promote the general welfare and foster a healthy environment. However, the requirements for noise analysis and consideration of noise abatement and/or mitigation 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 baseline-versus-build analysis to assess whether a project will have a noise impact. If a proposed project is determined to have a significant 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 National Environmental Policy Act and 23 CFR 772 noise analysis; please see Chapter 4 of this document for further information on noise analysis under the California Environmental Quality Act.

National Environmental Policy Act and 23 Code of Regulations 772 Analysis

For highway transportation projects with Federal Highway Administration (Caltrans, as assigned) involvement, the Federal-Aid Highway Act of 1970 and the associated implementing regulations (23 CFR 772) govern the analysis and abatement of traffic noise impacts. 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 include noise abatement criteria that are used to determine when a traffic noise impact would occur. The noise abatement criteria differ depending on the type of land use under analysis. For example, the noise abatement criterion for residences (67 dBA) is lower than the noise abatement criterion for commercial areas (72 dBA). Table 3.32 lists the noise abatement criteria for use in the National Environmental Policy Act 23 CFR 772 analysis.

Table 3.32 Noise Abatement Criteria

Activity Category	Noise Abatement Criteria, Hourly A-Weighted Noise Level, $L_{eq(h)}$	Description of Activity Category
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[1]	67 (Exterior)	Residential.
C[1]	67 (Exterior)	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.

Table 3.32 Noise Abatement Criteria

Activity Category	Noise Abatement Criteria, Hourly A-Weighted Noise Level, $L_{eq(h)}$	Description of Activity Category
D	52 (Interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	72 (Exterior)	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A–D or F.
F	No Noise Abatement Criteria (reporting only)	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical, etc.), and warehousing.
G	No Noise Abatement Criteria (reporting only)	Undeveloped lands that are not permitted.

L_{eq}: Sound Equivalent Noise Level

[1] Includes undeveloped lands permitted for this activity category.

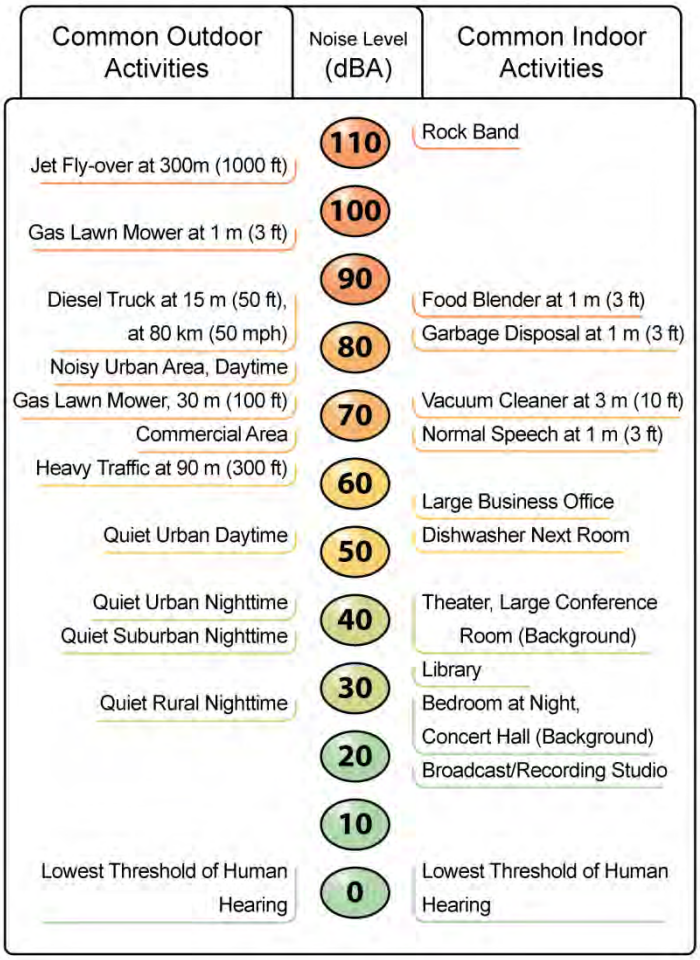
Source: *23 CFR 772,* 2011.

Figure 3-33 shows a range of noise levels for common activities so that a comparison can be made between the predicted traffic noise levels discussed in this section with common activities.

According to Caltrans' *Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects, May 2011*, a noise impact occurs when the predicted future noise level with the project substantially exceeds the existing noise level (defined as a 12-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 coming within 1 decibel of noise abatement criteria.

If it is determined that the project will have noise impacts, then potential abatement measures must be considered. Noise abatement measures that are determined to be reasonable and feasible at the time of final design are incorporated into the project plans and specifications. This document discusses noise abatement measures that would likely be incorporated in the project.

Figure 3-33 Noise Levels of Common Activities



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 based on three factors, including the noise reduction design goal (7-decibel reduction at least at one receiver), the cost of noise abatement, and the viewpoints of benefitted land use (including property owners and residents of the benefitted land use).

Affected Environment

Information in this section is from the *Noise Study Report, Centennial Corridor Project* (January 2013) and the *Noise Abatement Decision Report, Centennial Corridor Project* (May 2013). In the *Noise Study Report*, the project corridor area was divided into six general segments for traffic noise impacts analysis:

1) Centennial Corridor west of State Route 99 – Alternative A

2) Centennial Corridor west of State Route 99 – Alternative B
3) State Route 58 east of State Route 99 – Alternatives A, B, and C
4) State Route 99 south of State Route 58 – Alternatives A, B, and C
5) Centennial Corridor/State Route 99 north of State Route 58 – Alternative C
6) Westside Parkway – Calloway Drive to Coffee Road

The six segments were divided further into 32 distinct areas based on major local interchanges and direction of travel (westbound, eastbound, northbound, and southbound), as well as which freeway the project follows (Centennial Corridor Alternatives A, B, and C, existing segment of State Route 58, and State Route 99). The areas are shown in Figures 3-34 through 3-47, provided in Volume 2. No analysis was done in regions that lacked areas with frequent outdoor use. Mapping in Volume 2 shows the locations that were analyzed as well as receiver and soundwall locations. The following land uses occur along the Centennial Corridor:

- Category B – single-family and multi-family residences
- Category C (exterior) – Stockdale Christian School; Centennial Park; Saunders Park; Yokuts Park; Beach Park; Central Bakersfield Community Center/Clinica Sierra Vista; Montessori Children's Center; Camelot Park Family Fun Center; and six places of worship
- Category D (interior) – Bakersfield fire station; Stockdale Christian School; Central Bakersfield Community Center/Clinica Sierra Vista; Montessori Children's Center
- Category E – various hotels/motels; Outback restaurant's outside dining area.

Environmental Consequences Under the National Environmental Policy Act

The project is considered a Type I project by 23 CFR 772 because of the proposed construction that would connect State Route 58 to the Westside Parkway, as well as the improvements along State Route 99, the existing portion of State Route 58, and new connections between State Route 99 and State Route 58 will add lanes and change profile of some parts of different roadway segments.

The following paragraphs explain the steps in predicting traffic noise levels along the project corridor as a result of the proposed changes to the existing freeways and construction of new highway. Results of noise prediction by alternative are also presented.

Existing Noise-Level Measurements

Short-term noise monitoring done at 44 locations in October 2011 lasted 20 minutes at each spot. Long-term noise monitoring was done at two locations in January 2010 and 28 locations in October 2011.

Future Noise-Level Modeling

The Federal Highway Administration's Traffic Noise Model Version 2.5 was used for the noise computations. Receivers, defined as single points, were at frequent outdoor use areas such as residences, schools, and recreational areas.

Results of the traffic noise analysis for each alternative are presented by geographic area. A comparison of current noise levels to the projected noise levels in 2038 under the No-Build Alternative and the build alternatives is provided. Comparison to existing conditions (2008) indicates traffic noise impacts to the receptors; comparison of the build and no-build conditions indicates the direct effect of the project.

Where noise levels met the noise abatement criteria, soundwalls were evaluated to determine if they were reasonable and feasible. The criteria for determining when an abatement measure is reasonable and feasible are provided above in the Regulatory Setting.

Reasonableness of noise abatement (for each noise barrier found to be acoustically feasible) must then be determined based on the cost allowance calculation procedure identified in the *Caltrans Traffic Noise Analysis Protocol for New Highway Construction, Reconstruction, and Retrofit Barrier Projects*. A soundwall is considered reasonable if it costs less than the reasonable allowance for that barrier (described in more detail in the May 2013 *Noise Abatement Decision Report, Centennial Corridor Project*), meets the design goal, and the viewpoints of benefitted receivers have been taken into consideration. The preliminary determination of reasonableness is discussed later in this section.

Alternative A

Tables 3.33 through 3.35 show the results of the traffic noise analysis for the project in 2038 with implementation of Alternative A. The analysis indicated that 532 outdoor use areas would be impacted by traffic noise levels. Figure 3-34, provided in Volume 2, provides a key map for noise measurement and soundwall locations. Figures 3-35 to 3-38, provided in Volume 2, show receiver locations.

Table 3.33 Traffic Noise Impact Analysis – Alternative A Centennial Corridor West of State Route 99

Noise Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative A (dBA)	Noise Impact Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)					Reasonable and Feasible?
					8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	
RA-1	73	73	75	Yes	74	73	73	73	73	No
RA-2	60	60	68	Yes	66	66	65	65	65	No
RA-3	60	60	67	Yes	64	64	62	61	61	No
RA-4	73	73	74	Yes	73	73	73	73	73	No
RA-6	52	52	71	Yes	68	66	65	64	64	Yes
RA-7	52	52	69	Yes	67	64	63	62	62	Yes

Table 3.33 Traffic Noise Impact Analysis – Alternative A Centennial Corridor West of State Route 99

Noise Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative A (dBA)	Noise Impact Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)					Reasonable and Feasible?
					8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	
RA-8	52	52	66	Yes	64	64	61	61	60	Yes
RA-9	52	52	63	No	62	61	60	59	59	No
RA-10	52	52	62	No	61	61	59	59	58	No
RA-11	52	52	64	Yes	63	63	60	59	58	Yes
RA-12	52	52	72	Yes	69	66	64	62	61	Yes
RA-12A	52	52	72	Yes	70	66	64	64	63	Yes
RA-13	52	52	71	Yes	69	69	67	66	66	Yes
RA-13A	52	52	74	Yes	72	68	66	66	65	Yes
RA-14	52	52	73	Yes	71	69	66	65	64	Yes
RA-15	52	52	69	Yes	67	67	63	61	60	Yes
RA-16	52	52	68	Yes	66	66	62	61	59	Yes
RA-17	52	52	71	Yes	68	68	63	62	61	Yes
RA-18	52	52	69	Yes	67	64	62	61	60	Yes
RA-18A	52	52	73	Yes	69	67	66	65	64	Yes
RA-19	52	52	66	Yes	64	64	61	59	58	Yes
RA-20	52	52	69	Yes	67	65	63	61	61	Yes
RA-21	52	52	69	Yes	67	66	63	61	60	Yes
RA-22	50	50	67	Yes	65	65	62	59	58	Yes
RA-23	50	50	68	Yes	66	63	63	60	59	Yes
RA-24	50	50	65	Yes	63	62	59	57	56	Yes
RA-25	50	50	62	Yes	60	60	57	55	55	Yes
RA-26	50	50	61	No	59	59	57	55	55	No
RA-27	50	50	62	Yes	61	60	61	59	58	No
RA-28	54	54	66	Yes	65	63	62	61	61	Yes
RA-29	54	54	70	Yes	65	64	62	62	61	Yes
RA-30	54	54	67	Yes	66	62	60	60	59	Yes
RA-31	54	54	69	Yes	65	64	64	63	63	Yes
RA-32	54	54	67	Yes	65	62	60	59	59	Yes
RA-33	54	54	65	No	64	64	60	59	59	Yes
RA-34	54	54	63	No	62	59	57	56	55	Yes
RA-35	54	54	62	No	60	58	56	56	56	Yes
RA-36	52	52	72	Yes	65	64	64	63	62	Yes
RA-37	52	52	68	Yes	67	63	61	61	60	Yes
RA-38	52	52	69	Yes	66	66	62	61	60	Yes
RA-39	52	52	68	Yes	65	65	62	61	61	Yes
RA-40	71	71	70	No	--	--	--	--	--	--
RA-41	63	63	70	Yes	68	67	65	63	62	Yes
RA-42	63	63	71	Yes	68	67	65	63	62	Yes
RA-43	63	63	70	Yes	67	67	64	62	62	Yes
RA-44	59	59	70	Yes	67	65	63	62	61	Yes
RA-45	59	59	69	Yes	67	64	63	62	61	Yes
RA-46	63	63	69	Yes	66	64	63	62	61	Yes

Table 3.33 Traffic Noise Impact Analysis – Alternative A Centennial Corridor West of State Route 99

Noise Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative A (dBA)	Noise Impact Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)					Reasonable and Feasible?
					8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	
RA-47	63	63	69	Yes	66	64	63	62	62	Yes
RA-49	63	63	70	Yes	65	65	64	63	63	Yes
RA-50	53	53	66	Yes	64	61	60	60	59	Yes
RA-51	53	53	68	Yes	64	62	61	60	60	Yes
RA-53	53	53	59	No	58	56	55	54	53	No
RA-54	53	53	69	Yes	64	62	61	60	59	Yes
RA-55	53	53	64	No	62	59	57	56	56	Yes
RA-56	53	53	62	No	61	58	57	56	56	No
RA-57	53	53	69	Yes	67	63	62	61	60	Yes
RA-58	53	53	68	Yes	66	63	61	60	59	Yes
RA-59	53	53	68	Yes	65	64	63	59	59	Yes
RA-60	56	56	69	Yes	67	63	62	61	61	Yes
RA-61	56	56	69	Yes	67	63	63	61	60	Yes
RA-62	56	56	69	Yes	67	63	62	61	60	Yes
RA-64	56	56	67	Yes	64	62	61	60	59	Yes
RA-65	52	52	70	Yes	67	64	63	62	61	Yes
RA-66	52	52	70	Yes	67	64	63	62	61	Yes
RA-67	52	52	69	Yes	66	63	63	62	61	Yes
RA-69	52	52	69	Yes	66	65	64	62	62	Yes
RA-70	52	52	69	Yes	66	65	64	64	63	Yes
RA-71	52	52	71	Yes	70	69	68	67	66	Yes
RA-72	52	52	72	Yes	71	70	68	67	67	Yes
RA-73	52	52	72	Yes	70	69	69	67	66	Yes
RA-74	52	52	72	Yes	70	69	68	67	66	Yes
RA-75	52	52	72	Yes	69	68	67	66	65	Yes
RA-76	52	52	68	Yes	64	64	63	62	61	Yes
RA-77	52	52	64	Yes	62	61	61	60	60	No

dBA: A-weighted decibels.
--: Not Evaluated
[1] - Receivers that are noise measurement sites that are not located at an outdoor use area, or those subject to acquisitions, are not listed in this table because they do not represent a future outdoor use area and do not qualify for noise abatement.
Source: Developed from the *Noise Study Report* 2013.

Table 3.34 Traffic Noise Impact Analysis – Alternative A State Route 58 East of State Route 99

Noise Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative A (dBA)	Noise Impact Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)					Reasonable and Feasible?
					8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	
R58-1	70	73	76	Yes	71	69	68	67	66	Yes
R58-2	68	71	75	Yes	70	68	67	66	65	Yes
R58-4	67	70	74	Yes	68	66	65	64	63	Yes
R58-5	60	63	67	Yes	64	63	62	62	61	Yes
R58-6	58	61	65	No	61	60	59	58	57	Yes
R58-7	67	70	74	Yes	68	67	66	65	64	Yes
R58-7A	61	64	67	Yes	64	63	62	62	61	Yes
R58-8	68	71	75	Yes	68	67	66	65	64	Yes
R58-9	65	70	75	Yes	67	65	64	62	62	Yes
R58-10	65	70	74	Yes	66	65	64	63	62	Yes
R58-11	67	70	70	Yes	68	68	65	65	65	Yes
R58-12	65	68	68	Yes	67	65	62	61	60	Yes
R58-13	65	66	67	Yes	65	64	61	60	60	Yes
R58-15	69	70	70	Yes	68	65	63	62	61	Yes
R58-16	71	72	73	Yes	69	68	65	63	62	Yes
R58-17	66	67	68	Yes	66	66	63	61	60	Yes
R58-18	67	70	74	Yes	68	66	65	64	63	Yes
R58-19	57	60	64	No	61	60	59	58	58	No
R58-20	62	65	71	Yes	64	64	63	62	62	Yes
R58-20A	65	68	75	Yes	67	67	65	64	64	Yes
R58-21	66	69	75	Yes	67	65	64	63	63	Yes
R58-22	59	62	66	Yes	63	62	61	60	60	Yes
R58-23	52	55	57	No	57	56	55	54	54	No
R58-24	56	59	61	No	60	60	59	59	58	No
R58-24A	65	68	71	Yes	66	65	65	64	63	Yes
R58-25	57	60	63	No	61	61	61	60	60	No
R58-26	57	60	63	No	61	61	60	60	60	No
R58-27	57	60	63	No	61	61	60	60	59	No
R58-28	66	69	71	Yes	66	65	65	64	63	No
R58-29	59	62	65	No	61	61	60	60	59	No
R58-30	58	61	62	No	58	57	57	56	56	No
R58-32	59	62	64	No	60	59	59	59	58	No
R58-33	71	74	76	Yes	68	67	67	66	66	Yes
R58-34	66	70	73	Yes	67	66	66	65	64	Yes
R58-35	66	70	74	Yes	67	66	66	65	64	Yes
R58-36	68	72	76	Yes	67	66	65	63	62	Yes
R58-37	58	58	59	No	56	55	54	54	53	No
R58-37A	71	71	74	Yes	67	66	65	65	64	Yes
R58-37B	69	69	71	Yes	66	65	64	63	63	Yes
R58-38	57	57	58	No	56	56	56	56	55	No
R58-39	63	63	65	No	60	59	59	59	59	Yes
R58-40	72	72	76	Yes	70	69	68	67	66	Yes

Table 3.34 Traffic Noise Impact Analysis – Alternative A State Route 58 East of State Route 99

Noise Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative A (dBA)	Noise Impact Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)					Reasonable and Feasible?
					8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	
R58-41	68	68	71	Yes	66	65	65	64	64	Yes
R58-42	62	62	65	No	62	62	61	61	61	No
R58-42A	58	58	61	No	60	60	60	59	59	No
R58-43	62	65	66	Yes	64	63	63	63	63	No
R58-44	62	65	67	Yes	64	64	64	64	64	No
R58-45	63	62	64	No	61	60	60	59	59	Yes
R58-46	65	64	66	Yes	62	61	61	60	59	Yes
R58-47	61	60	62	No	61	61	60	60	60	No
R58-48	65	64	66	Yes	63	62	61	61	60	Yes
R58-49	69	72	73	Yes	67	65	65	64	63	Yes
R58-50	68	71	71	Yes	68	67	66	65	65	Yes
R58-51	60	63	64	No	62	60	59	58	57	Yes
R58-52	65	68	68	Yes	66	63	62	61	60	Yes
R58-54	69	72	72	Yes	68	67	66	65	64	Yes
R58-55	64	67	67	Yes	65	62	61	60	59	Yes
R58-56	70	72	72	Yes	68	67	66	65	64	Yes
R58-57	70	72	73	Yes	68	67	66	65	65	Yes
R58-58	62	64	65	No	63	61	60	59	58	No
R58-59	69	71	72	Yes	67	66	65	64	64	Yes
R58-60	66	69	70	Yes	66	65	64	63	63	Yes
R58-61	71	71	73	Yes	68	67	66	65	64	Yes
R58-62	71	71	73	Yes	68	67	66	65	65	Yes
R58-63	72	72	73	Yes	69	67	67	66	65	Yes
R58-64	63	66	68	Yes	66	64	63	62	62	Yes
R58-65	67	70	72	Yes	69	67	66	65	65	Yes
R58-66	67	70	72	Yes	69	66	65	65	64	Yes
R58-67	66	68	70	--	--	--	--	--	--	--
R58-68[2]	43	45	46	No	--	--	--	--	--	--
R58-69	62	65	68	Yes	66	66	65	65	65	No
R58-71	61	64	67	Yes	64	64	64	64	64	No
R58-73	68	71	73	Yes	68	67	66	65	64	Yes
R58-74	67	70	73	Yes	70	68	66	64	63	Yes
R58-75	73	76	79	Yes	74	70	69	68	67	Yes
R58-76	69	72	74	Yes	71	68	66	65	64	Yes
R58-77	65	68	68	Yes	66	63	62	61	60	Yes
R58-78	66	69	69	Yes	66	65	63	61	60	Yes
R58-79	63	66	67	Yes	65	64	62	61	60	Yes
R58-80	70	70	70	Yes	68	65	64	63	62	Yes
R58-81	73	73	73	Yes	69	67	66	66	65	Yes
R58-82	64	64	65	No	63	60	59	59	58	Yes
R58-84	72	72	73	Yes	68	67	66	65	65	Yes
R58-85	72	72	73	Yes	68	67	66	65	64	Yes

Table 3.34 Traffic Noise Impact Analysis – Alternative A State Route 58 East of State Route 99

Noise Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative A (dBA)	Noise Impact Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)					Reasonable and Feasible?
					8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	
R58-86	64	64	66	Yes	64	61	60	59	59	Yes
R58-87	71	71	73	Yes	68	66	66	65	64	Yes
R58-88	68	68	70	Yes	65	63	62	61	60	Yes
R58-89	66	66	67	Yes	64	62	61	60	60	Yes
R58-90	67	67	68	Yes	67	64	63	62	61	Yes
R58-91	67	67	68	Yes	66	64	62	61	60	Yes
R58-92	71	71	73	Yes	67	66	65	65	64	Yes
R58-93	70	70	72	Yes	67	66	65	64	63	Yes
R58-94	69	69	70	Yes	68	65	63	62	61	Yes
R58-95	67	67	68	Yes	67	63	62	61	60	Yes
R58-96	72	72	73	Yes	68	67	66	65	64	Yes
R58-97	69	69	69	Yes	66	64	63	62	61	Yes
R58-98	74	74	74	Yes	70	68	67	66	65	Yes
R58-99	67	67	69	Yes	67	65	64	63	63	Yes
R58-100	66	66	67	Yes	65	64	63	62	62	Yes
R58-101	62	66	68	Yes	64	63	62	61	60	Yes
R58-102	70	74	77	Yes	69	67	66	65	64	Yes
R58-103	59	63	65	No	62	61	60	58	57	No
R58-104	62	66	68	Yes	64	63	62	61	60	Yes
R58-105	59	63	64	No	63	62	61	60	58	No
R58-106	75	78	79	Yes	72	70	67	65	64	Yes
R58-107	67	71	73	Yes	70	69	66	64	62	Yes
R58-108	72	75	77	Yes	72	72	68	66	65	Yes
R58-109	72	75	77	Yes	72	71	67	66	65	Yes
R58-110	66	70	72	Yes	70	69	66	64	62	Yes
R58-111	73	76	77	Yes	74	71	69	68	67	Yes
R58-112	72	75	77	Yes	71	69	68	67	66	Yes
R58-113	71	74	75	Yes	72	71	67	65	65	Yes
R58-114	70	73	75	Yes	73	69	67	66	65	Yes
R58-115	71	74	76	Yes	71	69	68	67	66	Yes
R58-116	70	73	75	Yes	73	69	67	66	65	Yes
R58-117	67	70	72	Yes	70	66	64	63	62	Yes
R58-118	70	73	75	Yes	70	68	67	66	65	Yes
R58-119	66	69	71	Yes	69	65	63	62	61	Yes
R58-120	66	69	72	Yes	69	65	63	62	62	Yes
R58-121	67	70	72	Yes	70	66	64	63	62	Yes
R58-122	70	73	74	Yes	70	68	67	66	65	Yes
R58-123	65	68	70	Yes	68	67	63	62	61	Yes
R58-124	66	69	71	Yes	69	68	64	63	62	Yes
R58-125	67	70	71	Yes	67	66	65	65	65	Yes
R58-126	65	68	70	Yes	69	64	63	63	62	Yes
R58-127	66	69	71	Yes	69	66	65	65	65	Yes

Table 3.34 Traffic Noise Impact Analysis – Alternative A State Route 58 East of State Route 99

Noise Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative A (dBA)	Noise Impact Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)					Reasonable and Feasible?
					8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	
R58-128	65	69	70	Yes	67	66	65	64	63	Yes
R58-129	59	63	64	No	64	63	63	63	63	No
R58-131	65	69	70	Yes	65	64	63	62	61	Yes
R58-132	57	61	62	No	59	58	58	56	56	No
R58-133	69	73	75	Yes	68	67	66	65	64	Yes
R58-134	70	74	75	Yes	69	69	67	66	65	Yes
R58-135	58	62	63	No	61	60	59	57	57	No
R58-136	70	72	74	Yes	68	66	65	64	63	Yes
R58-137	58	60	61	No	59	58	57	56	54	No
R58-138	63	65	67	Yes	65	64	61	62	58	Yes
R58-139	70	72	74	Yes	68	66	64	63	61	Yes
R58-140	74	76	78	Yes	72	70	67	65	64	Yes
R58-141	67	69	71	Yes	68	67	63	61	60	Yes
R58-142	66	68	70	Yes	68	67	64	62	61	Yes
R58-143	73	75	77	Yes	71	67	65	64	63	Yes
R58-144	70	72	73	Yes	70	69	65	63	62	Yes
R58-145	67	70	71	Yes	69	68	64	62	61	Yes
R58-146	64	67	69	Yes	67	66	63	61	60	Yes
R58-147	68	71	72	Yes	69	68	64	62	61	Yes
R58-148	70	72	73	Yes	71	67	65	64	63	Yes
R58-149	69	71	73	Yes	71	66	65	64	63	Yes
R58-150	67	69	71	Yes	69	67	63	62	61	Yes
R58-151	65	68	70	Yes	67	67	63	62	61	Yes
R58-152	69	71	72	Yes	68	66	65	64	63	Yes
R58-153	69	71	73	Yes	68	66	65	64	63	Yes
R58-154	69	71	73	Yes	67	66	65	64	63	Yes
R58-155	64	67	70	Yes	67	67	63	62	61	Yes
R58-156	65	68	70	Yes	66	65	62	61	60	Yes
R58-157	68	70	72	Yes	66	65	63	63	62	Yes
R58-158	67	69	70	Yes	69	64	63	62	61	Yes
R58-159	69	71	72	Yes	67	65	64	63	62	Yes
R58-160	65	68	70	Yes	67	66	62	61	60	Yes
R58-161	65	68	70	Yes	66	66	62	61	60	Yes
R58-162	65	68	69	Yes	66	66	62	61	60	Yes
R58-163	62	65	67	Yes	64	63	60	58	58	Yes
R58-164	68	70	72	Yes	67	65	64	63	62	Yes
R58-165	68	70	72	Yes	67	65	64	63	62	Yes
R58-166	63	66	68	Yes	65	63	61	60	59	Yes
R58-167	66	68	70	Yes	67	63	63	62	61	Yes
R58-168	66	68	70	Yes	66	63	63	62	61	Yes
R58-169	66	68	70	Yes	66	64	63	62	61	Yes
R58-170	66	68	70	Yes	66	64	63	62	61	Yes

Table 3.34 Traffic Noise Impact Analysis – Alternative A State Route 58 East of State Route 99

Noise Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative A (dBA)	Noise Impact Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)					Reasonable and Feasible?
					8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	
R58-171	67	69	70	Yes	68	65	64	63	62	Yes
R58-172	67	69	70	Yes	69	66	65	64	64	Yes

dBA: A-weighted decibels.
--: Not evaluated

Notes:
1 – Receivers that are noise measurement sites that are not located at an outdoor use area, or those subject to acquisitions, are not listed in this table because they do not represent a future outdoor use area and do not qualify for noise abatement.
2 – Representative of an interior noise level since there were no exterior outdoor use areas.

Source: Developed from the *Noise Study Report* 2013.

Table 3.35 Traffic Noise Impact Analysis – Alternative A State Route 99 South of State Route 58

Noise Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative A (dBA)	Noise Impact Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)					Reasonable and Feasible?
					8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	
R99-1	59	63	63	No	62	62	62	62	62	No
R99-2	66	67	68	Yes	67	67	67	67	66	No
R99-3	58	59	59	No	57	56	56	56	56	No
R99-4	66	67	67	Yes	--	--	67	66	66	No
R99-5	65	66	66	Yes	--	--	66	65	65	No
R99-6	65	66	67	Yes	--	--	66	65	65	No
R99-7	66	67	67	Yes	--	--	66	64	64	No
R99-8	64	65	66	Yes	--	--	65	64	63	No
R99-9	62	63	63	No	--	--	--	--	--	--
R99-10	59	60	60	No	--	--	--	--	--	--
R99-10A	57	58	58	No	--	--	--	--	--	--
R99-11	60	63	67	Yes	62	62	62	62	61	No
R99-12	70	73	74	Yes	70	69	69	69	68	No
R99-13	68	71	74	Yes	69	69	68	68	68	No
R99-14	69	72	73	Yes	--	--	71	70	70	No
R99-15	62	65	68	Yes	--	--	68	68	68	No
R99-16	60	64	64	No	--	--	64	63	63	No
R99-17	64	68	68	Yes	--	--	67	66	65	No
R99-18	65	69	69	Yes	--	--	68	67	66	No
R99-19	65	68	69	Yes	--	--	68	67	66	No
R99-20	56	59	59	No	--	--	59	59	59	No
R99-20A	62	65	65	No	--	--	64	63	63	No
R99-21	58	61	62	No	--	--	--	61	60	No

Table 3.35 Traffic Noise Impact Analysis – Alternative A State Route 99 South of State Route 58

Noise Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative A (dBA)	Noise Impact Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)					Reasonable and Feasible?
					8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	
R99-21A	61	64	67	Yes	--	--	--	64	64	No
R99-21B	65	68	69	Yes	--	--	--	67	67	No
R99-21C	61	64	65	No	--	--	--	64	64	No
R99-22	60	63	65	No	--	--	--	63	63	No
R99-23	62	65	72	Yes	68	68	67	67	67	No
R99-25	64	67	74	Yes	70	70	69	69	69	No
R99-26	61	66	68	Yes	--	--	68	68	68	No
R99-27	60	65	68	Yes	--	--	68	67	67	No
R99-28	61	66	66	Yes	--	--	66	65	65	No
R99-29	56	61	61	No	--	--	61	61	61	No
R99-30	57	62	62	No	62	62	61	61	60	No
R99-31	68	73	73	Yes	66	65	64	63	63	Yes
R99-32	68	73	71	Yes	66	65	64	63	62	Yes
R99-33	70	75	75	Yes	66	64	63	62	61	Yes
R99-34	62	67	67	Yes	63	62	61	60	59	Yes
R99-36	64	69	70	Yes	65	64	64	63	61	Yes
R99-37	68	73	74	Yes	67	65	64	63	62	Yes
R99-40	59	63	71	Yes	68	67	67	67	66	No
R99-41	58	62	70	Yes	66	66	65	65	65	No
R99-43	60	64	72	Yes	66	65	64	63	63	No
R99-43A	57	61	67	Yes	63	62	62	62	62	No

dBA: A-weighted decibels.

--: Not Evaluated

[1] - Receivers that are noise measurement sites that are not located at an outdoor use area, or those subject to acquisitions, are not listed in this table because they do not represent a future outdoor use area and do not qualify for noise abatement.

Source: Developed from the *Noise Study Report* 2013.

Alternative B

Tables 3.36 through 3.38 show the results of the traffic noise analysis for the project in 2038 with implementation of Alternative B. The analysis concluded that 484 outdoor use areas would be impacted by traffic noise levels. Figures 3-39 to 3-42, provided in Volume 2, show receiver locations.

Table 3.36 Traffic Noise Impact Analysis – Alternative B Centennial Corridor West of State Route 99

Noise Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative B (dBA)	Noise Impact Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)					Reasonable and Feasible?
					8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	
RB-1	58	58	65	No	--	--	--	--	--	--
RB-2	58	58	62	No	--	--	--	--	--	--
RB-3	58	58	64	No	--	--	--	--	--	--
RB-4	58	58	63	No	--	--	--	--	--	--
RB-5	58	58	75	Yes	70	70	67	66	66	Yes
RB-6	58	58	63	No	61	61	59	58	58	No
RB-7	53	53	66	Yes	62	61	60	59	58	Yes
RB-8	53	53	74	Yes	69	68	67	65	64	Yes
RB-9	53	53	62	No	60	59	58	57	56	No
RB-10	53	53	68	Yes	64	63	62	61	61	Yes
RB-11	53	53	75	Yes	69	68	66	65	66	Yes
RB-12	53	53	63	No	59	59	58	57	57	Yes
RB-13	53	53	60	No	58	58	58	57	57	No
RB-14	53	53	61	No	60	59	59	58	58	No
RB-15	53	53	66	Yes	63	63	62	62	61	Yes
RB-16	53	53	68	Yes	65	65	64	64	64	No
RB-17	53	53	63	No	62	62	62	61	61	No
RB-18	53	53	60	No	59	59	59	58	58	No
RB-19	51	51	65	Yes	60	59	58	58	57	Yes
RB-19A	53	53	65	Yes	61	61	60	60	59	Yes
RB-20	51	51	65	Yes	59	58	58	57	56	Yes
RB-21	51	51	62	No	60	60	59	58	58	No
RB-22	51	51	65	Yes	63	61	61	60	59	Yes
RB-23	51	51	72	Yes	67	65	64	63	62	Yes
RB-24	51	51	76	Yes	68	67	66	64	64	Yes
RB-25	51	51	67	--	66	65	63	61	60	--
RB-26	51	51	77	Yes	71	69	65	64	63	Yes
RB-27	51	51	73	Yes	70	69	66	64	63	Yes
RB-28	51	51	75	Yes	72	69	67	66	65	Yes
RB-30	51	51	68	Yes	66	66	63	63	63	Yes
RB-31	51	51	70	Yes	67	67	65	64	63	Yes
RB-32	51	51	72	Yes	70	67	65	65	64	Yes
RB-34	67	67	67	Yes	66	66	65	65	65	No
RB-35	69	69	70	Yes	69	69	69	69	69	No
RB-36	52	52	66	Yes	63	60	59	57	56	Yes
RB-37	52	52	64	Yes	62	62	59	58	58	Yes
RB-38	52	52	58	No	57	57	57	55	54	No
RB-39	52	52	74	Yes	69	68	64	63	61	Yes
RB-39A	52	52	76	Yes	70	70	66	65	64	Yes
RB-40	52	52	68	Yes	65	64	62	60	58	Yes
RB-41	52	52	64	Yes	62	61	60	59	59	Yes
RB-42	52	52	72	Yes	67	65	65	64	63	Yes

Table 3.36 Traffic Noise Impact Analysis – Alternative B Centennial Corridor West of State Route 99

Noise Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative B (dBA)	Noise Impact Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)					Reasonable and Feasible?
					8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	
RB-43	52	52	61	No	60	60	59	59	58	No
RB-44	52	52	70	Yes	65	65	64	63	63	Yes
RB-45	53	53	63	No	62	62	62	62	62	No
RB-46	53	53	67	Yes	66	66	66	66	66	No
RB-47	53	53	61	No	60	60	60	60	60	No
RB-48	51	51	62	No	61	61	60	60	60	No
RB-49	51	51	69	Yes	65	64	64	63	63	No
RB-50	51	51	66	Yes	62	62	61	61	60	No
RB-51	51	51	62	No	59	59	59	58	58	No
RB-52	51	51	62	No	60	59	59	58	57	No
RB-53	51	51	69	Yes	65	64	63	61	61	Yes
RB-54	51	51	76	Yes	69	68	67	65	64	Yes
RB-55	51	51	70	Yes	67	66	63	61	60	Yes
RB-57	51	51	67	Yes	65	64	62	61	60	Yes
RB-58	51	51	58	No	56	54	54	53	53	No
RB-59	51	51	71	Yes	66	64	63	62	62	Yes
RB-59A	51	51	74	Yes	69	67	66	65	65	Yes
RB-60	51	51	69	Yes	64	62	62	61	60	Yes
RB-61	62	62	66	Yes	61	60	59	59	58	Yes
RB-62	62	62	62	No	60	59	58	58	58	No
RB-63	62	62	64	No	63	63	63	62	62	No
RB-64	62	62	72	Yes	65	64	64	64	63	Yes
RB-65	62	62	71	Yes	68	68	68	67	67	No
RB-66	63	63	65	No	65	64	64	64	64	No
RB-67	63	63	66	Yes	65	65	65	65	65	No
RB-69	63	63	70	Yes	67	66	66	66	66	No
RB-70	63	63	68	Yes	64	64	63	63	63	Yes
RB-71	63	63	67	Yes	64	63	63	63	62	Yes
RB-73	63	63	69	Yes	64	63	63	62	62	Yes
RB-74	63	63	66	Yes	62	61	60	59	60	Yes
RB-75	52	52	65	Yes	61	59	59	58	58	Yes
RB-76	52	52	66	Yes	61	60	60	59	58	Yes
RB-77	52	52	65	Yes	61	60	60	59	58	Yes
RB-79	52	52	65	Yes	61	60	59	59	58	Yes
RB-80	52	52	65	Yes	61	60	60	59	59	Yes
RB-81	52	52	70	Yes	67	66	65	64	64	Yes
RB-82	52	52	71	Yes	66	65	65	63	63	Yes
RB-83	52	52	71	--	68	67	66	64	63	--
RB-84	52	52	71	Yes	69	67	66	65	63	Yes
RB-85	52	52	72	Yes	68	66	65	64	63	Yes

Table 3.36 Traffic Noise Impact Analysis – Alternative B Centennial Corridor West of State Route 99

Noise Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative B (dBA)	Noise Impact Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)					Reasonable and Feasible?
					8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	
RB-86	52	52	70	Yes	66	65	64	63	62	Yes
RB-87	52	52	66	Yes	63	63	63	62	61	Yes

dBA: A-weighted decibels.

--: Not Evaluated

[1] - Receivers that are noise measurement sites that are not located at an outdoor use area, or those subject to acquisitions, are not listed in this table because they do not represent a future outdoor use area and do not qualify for noise abatement.

Source: Developed from the *Noise Study Report* 2013.

Table 3.37 Traffic Noise Impact Analysis – Alternative B State Route 58 East of State Route 99

Noise Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative B (dBA)	Noise Impact Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)					Reasonable and Feasible?
					8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	
R58-1	70	73	76	Yes	72	69	68	67	66	Yes
R58-2	68	71	75	Yes	70	68	67	66	65	Yes
R58-4	67	70	74	Yes	68	67	65	64	63	Yes
R58-5	60	63	67	Yes	65	64	63	62	61	Yes
R58-6	58	61	65	No	61	60	59	59	58	Yes
R58-7	67	70	74	Yes	68	67	66	65	65	Yes
R58-7A	61	64	68	Yes	65	64	63	62	62	Yes
R58-8	68	71	75	Yes	69	67	66	65	64	Yes
R58-9	65	70	75	Yes	67	66	64	63	62	Yes
R58-10	65	70	74	Yes	66	65	64	63	62	Yes
R58-11	67	70	69	Yes	68	66	64	63	63	Yes
R58-12	65	68	69	Yes	66	64	62	61	60	Yes
R58-13	65	66	67	Yes	65	64	61	60	60	Yes
R58-15	69	70	70	Yes	67	64	63	62	61	Yes
R58-16	71	72	71	Yes	68	65	63	62	62	Yes
R58-17	66	67	68	Yes	66	65	62	61	60	Yes
R58-18	67	70	73	Yes	70	69	67	65	64	Yes
R58-19	57	60	65	No	62	61	60	59	58	Yes
R58-20	62	65	72	Yes	66	65	64	63	62	Yes
R58-20A	65	68	76	Yes	69	67	66	65	64	Yes
R58-21	66	69	76	Yes	67	66	65	64	63	Yes
R58-22	59	62	66	Yes	63	63	62	61	60	Yes
R58-23	52	55	58	No	57	56	56	55	55	No
R58-24	56	59	61	No	60	60	60	59	58	No
R58-24A	65	68	71	Yes	66	66	65	65	64	Yes

Table 3.37 Traffic Noise Impact Analysis – Alternative B State Route 58 East of State Route 99

Noise Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative B (dBA)	Noise Impact Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)					Reasonable and Feasible?
					8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	
R58-25	57	60	63	No	61	61	61	60	60	No
R58-26	57	60	63	No	61	61	60	60	60	No
R58-27	57	60	63	No	61	61	60	60	59	No
R58-28	66	69	71	Yes	66	65	65	64	63	No
R58-29	59	62	65	No	62	61	61	60	60	No
R58-30	58	61	62	No	58	57	57	57	56	No
R58-32	59	62	64	No	60	59	59	59	58	No
R58-33	71	74	76	Yes	68	67	67	66	66	Yes
R58-34	66	70	73	Yes	68	67	66	65	65	Yes
R58-35	66	70	74	Yes	68	67	66	65	65	Yes
R58-36	68	72	76	Yes	68	67	65	64	63	Yes
R58-37	58	58	59	No	56	55	55	54	54	No
R58-37A	71	71	74	Yes	67	66	66	65	64	Yes
R58-37B	69	69	71	Yes	66	65	64	64	63	Yes
R58-38	57	57	59	No	56	56	56	56	55	No
R58-39	63	63	65	No	60	60	60	60	60	Yes
R58-40	72	72	76	Yes	70	69	68	67	66	Yes
R58-41	68	68	71	Yes	66	65	65	64	64	Yes
R58-42	62	62	65	No	62	62	61	61	61	No
R58-42A	58	58	61	No	60	60	60	59	59	No
R58-43	62	65	66	Yes	64	63	63	63	62	No
R58-44	62	65	67	Yes	64	64	64	64	64	No
R58-45	63	62	64	No	61	60	60	59	59	Yes
R58-46	65	64	66	Yes	62	61	61	60	59	Yes
R58-47	61	60	62	No	61	61	60	60	59	No
R58-48	65	64	66	Yes	63	62	61	61	60	Yes
R58-49	69	72	73	Yes	67	65	65	64	63	Yes
R58-50	68	71	71	Yes	68	67	66	65	65	Yes
R58-51	60	63	64	No	62	60	59	58	57	Yes
R58-52	65	68	68	Yes	66	63	62	61	60	Yes
R58-54	69	72	72	Yes	68	67	66	65	64	Yes
R58-55	64	67	67	Yes	65	62	61	60	59	Yes
R58-56	70	72	72	Yes	68	67	66	65	64	Yes
R58-57	70	72	73	Yes	68	67	66	65	65	Yes
R58-58	62	64	65	No	63	61	60	59	58	No
R58-59	69	71	72	Yes	67	66	65	64	64	Yes
R58-60	66	69	70	Yes	66	65	64	63	63	Yes
R58-61	71	71	73	Yes	68	67	66	65	64	Yes
R58-62	71	71	73	Yes	68	67	66	65	65	Yes
R58-63	72	72	73	Yes	69	67	67	66	65	Yes
R58-64	63	66	68	Yes	66	64	63	62	62	Yes
R58-65	67	70	72	Yes	69	67	66	65	65	Yes

Table 3.37 Traffic Noise Impact Analysis – Alternative B State Route 58 East of State Route 99

Noise Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative B (dBA)	Noise Impact Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)					Reasonable and Feasible?
					8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	
R58-66	67	70	72	Yes	69	66	65	65	64	Yes
R58-67	66	68	70	--	--	--	--	--	--	--
R58-68[2]	43	45	46	No	--	--	--	--	--	--
R58-69	62	65	68	Yes	66	66	65	65	65	No
R58-71	61	64	67	Yes	64	64	64	64	64	No
R58-73	68	71	73	Yes	68	67	66	65	64	Yes
R58-74	67	70	73	Yes	70	68	66	64	63	Yes
R58-75	73	76	79	Yes	74	70	69	68	67	Yes
R58-76	69	72	74	Yes	71	68	66	65	64	Yes
R58-77	65	68	68	Yes	66	63	62	61	60	Yes
R58-78	66	69	69	Yes	66	65	63	61	60	Yes
R58-79	63	66	67	Yes	65	64	62	61	60	Yes
R58-80	70	70	70	Yes	68	65	64	63	62	Yes
R58-81	73	73	73	Yes	69	67	66	66	65	Yes
R58-82	64	64	65	No	63	60	59	59	58	Yes
R58-84	72	72	73	Yes	68	67	66	65	65	Yes
R58-85	72	72	73	Yes	68	67	66	65	64	Yes
R58-86	64	64	66	Yes	64	61	60	59	59	Yes
R58-87	71	71	73	Yes	68	66	66	65	64	Yes
R58-88	68	68	70	Yes	65	63	62	61	60	Yes
R58-89	66	66	67	Yes	64	62	61	60	60	Yes
R58-90	67	67	68	Yes	67	64	63	62	61	Yes
R58-91	67	67	68	Yes	66	64	62	61	60	Yes
R58-92	71	71	73	Yes	67	66	65	65	64	Yes
R58-93	70	70	72	Yes	67	66	65	64	63	Yes
R58-94	69	69	70	Yes	68	65	63	62	61	Yes
R58-95	67	67	68	Yes	67	63	62	61	60	Yes
R58-96	72	72	73	Yes	68	67	66	65	64	Yes
R58-97	69	69	69	Yes	66	64	63	62	61	Yes
R58-98	74	74	74	Yes	70	68	67	66	65	Yes
R58-99	67	67	69	Yes	67	65	64	63	63	Yes
R58-100	66	66	67	Yes	65	64	63	62	62	Yes
R58-101	62	66	68	Yes	64	63	62	61	60	Yes
R58-102	70	74	77	Yes	69	67	66	65	64	Yes
R58-103	59	63	65	No	62	61	60	58	57	No
R58-104	62	66	68	Yes	64	63	62	61	60	Yes
R58-105	59	63	64	No	63	62	61	60	58	No
R58-106	75	78	79	Yes	72	70	67	65	64	Yes
R58-107	67	71	73	Yes	70	69	66	64	62	Yes
R58-108	72	75	77	Yes	72	72	67	66	65	Yes
R58-109	72	75	77	Yes	72	71	67	66	65	Yes
R58-110	66	70	72	Yes	70	69	66	64	62	Yes

Table 3.37 Traffic Noise Impact Analysis – Alternative B State Route 58 East of State Route 99

Noise Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative B (dBA)	Noise Impact Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)					Reasonable and Feasible?
					8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	
R58-111	73	76	77	Yes	74	71	69	68	67	Yes
R58-112	72	75	77	Yes	71	69	68	67	66	Yes
R58-113	71	74	75	Yes	72	71	67	65	65	Yes
R58-114	70	73	75	Yes	73	69	67	66	65	Yes
R58-115	71	74	76	Yes	71	69	68	67	66	Yes
R58-116	70	73	75	Yes	73	69	67	66	65	Yes
R58-117	67	70	72	Yes	70	66	64	63	62	Yes
R58-118	70	73	75	Yes	70	68	67	66	65	Yes
R58-119	66	69	71	Yes	69	65	63	62	61	Yes
R58-120	66	69	72	Yes	69	65	63	62	62	Yes
R58-121	67	70	72	Yes	70	66	64	63	62	Yes
R58-122	70	73	74	Yes	70	68	67	66	65	Yes
R58-123	65	68	70	Yes	68	67	63	62	61	Yes
R58-124	66	69	71	Yes	69	68	64	63	62	Yes
R58-125	67	70	71	Yes	67	66	65	65	65	Yes
R58-126	65	68	70	Yes	69	64	63	63	62	Yes
R58-127	66	69	71	Yes	69	66	65	65	65	Yes
R58-128	65	69	70	Yes	67	66	65	64	63	Yes
R58-129	59	63	64	No	64	63	63	63	63	No
R58-131	65	69	70	Yes	65	64	63	62	61	Yes
R58-132	57	61	62	No	59	58	58	56	56	No
R58-133	69	73	75	Yes	68	67	66	65	64	Yes
R58-134	70	74	75	Yes	69	69	67	66	65	Yes
R58-135	58	62	63	No	61	60	59	57	57	No
R58-136	70	72	74	Yes	68	66	65	64	63	Yes
R58-137	58	60	61	No	59	58	57	56	54	No
R58-138	63	65	67	Yes	65	64	61	62	58	Yes
R58-139	70	72	74	Yes	68	66	64	63	61	Yes
R58-140	74	76	78	Yes	72	70	67	65	64	Yes
R58-141	67	69	71	Yes	68	67	63	61	60	Yes
R58-142	66	68	70	Yes	68	67	64	62	61	Yes
R58-143	73	75	77	Yes	71	67	65	64	63	Yes
R58-144	70	72	73	Yes	70	69	65	63	62	Yes
R58-145	67	70	71	Yes	69	68	64	62	61	Yes
R58-146	64	67	69	Yes	67	66	63	61	60	Yes
R58-147	68	71	72	Yes	69	68	64	62	61	Yes
R58-148	70	72	73	Yes	71	67	65	64	63	Yes
R58-149	69	71	73	Yes	71	66	65	64	63	Yes
R58-150	67	69	71	Yes	69	67	63	62	61	Yes
R58-151	65	68	70	Yes	67	67	63	62	61	Yes
R58-152	69	71	72	Yes	68	66	65	64	63	Yes
R58-153	69	71	73	Yes	68	66	65	64	63	Yes

Table 3.37 Traffic Noise Impact Analysis – Alternative B State Route 58 East of State Route 99

Noise Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative B (dBA)	Noise Impact Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)					Reasonable and Feasible?
					8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	
R58-154	69	71	73	Yes	67	66	65	64	63	Yes
R58-155	64	67	70	Yes	67	67	63	62	61	Yes
R58-156	65	68	70	Yes	66	65	62	61	60	Yes
R58-157	68	70	72	Yes	66	65	63	63	62	Yes
R58-158	67	69	70	Yes	69	64	63	62	61	Yes
R58-159	69	71	72	Yes	67	65	64	63	62	Yes
R58-160	65	68	70	Yes	67	66	62	61	60	Yes
R58-161	65	68	70	Yes	66	66	62	61	60	Yes
R58-162	65	68	69	Yes	66	66	62	61	60	Yes
R58-163	62	65	67	Yes	64	63	60	58	58	Yes
R58-164	68	70	72	Yes	67	65	64	63	62	Yes
R58-165	68	70	72	Yes	67	65	64	63	62	Yes
R58-166	63	66	68	Yes	65	63	61	60	59	Yes
R58-167	66	68	70	Yes	67	63	63	62	61	Yes
R58-168	66	68	70	Yes	66	63	63	62	61	Yes
R58-169	66	68	70	Yes	66	64	63	62	61	Yes
R58-170	66	68	70	Yes	66	64	63	62	61	Yes
R58-171	67	69	70	Yes	68	65	64	63	62	Yes
R58-172	67	69	70	Yes	69	66	65	64	64	Yes

dBA: A-weighted decibels.

--: Not evaluated

Notes:
1 – Receivers that are noise measurement sites that are not located at an outdoor use area, or those subject to acquisitions, are not listed in this table because they do not represent a future outdoor use area and do not qualify for noise abatement.
2 – Representative of an interior noise level since there were no exterior outdoor use areas.

Source: Developed from the *Noise Study Report* 2013.

Table 3.38 Traffic Noise Impact Analysis – Alternative B State Route 99 South of State Route 58

Noise Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative B (dBA)	Noise Impact Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)					Reasonable and Feasible?
					8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	
R99-1	59	63	63	No	62	62	62	62	62	No
R99-2	67	68	68	Yes	67	67	67	66	66	No
R99-3	58	59	59	No	57	56	56	56	56	No
R99-4	66	67	67	Yes	--	--	67	66	66	No
R99-5	65	66	66	Yes	--	--	66	65	65	No
R99-6	66	67	67	Yes	--	--	66	65	65	No

Table 3.38 Traffic Noise Impact Analysis – Alternative B State Route 99 South of State Route 58

Noise Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative B (dBA)	Noise Impact Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)					Reasonable and Feasible?
					8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	
R99-7	66	67	67	Yes	--	--	66	64	64	No
R99-8	65	66	66	Yes	--	--	65	64	63	No
R99-9	62	63	63	No	--	--	--	--	--	--
R99-10	59	60	60	No	--	--	--	--	--	--
R99-10A	57	58	58	No	--	--	--	-	--	--
R99-11	60	63	67	Yes	62	62	62	62	61	No
R99-12	70	73	74	Yes	70	69	69	69	69	No
R99-13	68	71	74	Yes	69	69	68	68	68	No
R99-14	69	72	73	Yes	--	--	71	70	70	No
R99-15	62	65	69	Yes	--	--	68	68	68	No
R99-16	60	64	64	No	--	--	64	63	63	No
R99-17	64	68	68	Yes	--	--	67	66	65	No
R99-18	65	69	69	Yes	--	--	68	67	66	No
R99-19	65	68	69	Yes	--	--	68	67	67	No
R99-20	56	59	59	No	--	--	59	59	59	No
R99-20A	62	65	65	No	--	--	64	64	63	No
R99-21	58	61	62	No	--	--	--	61	60	No
R99-21A	61	64	67	Yes	--	--	--	65	64	No
R99-21B	65	68	69	Yes	--	--	--	67	67	No
R99-21C	61	64	65	No	--	--	--	64	64	No
R99-22	60	63	64	No	--	--	--	63	63	No
R99-23	62	65	72	Yes	69	68	68	67	67	No
R99-25	64	67	75	Yes	71	70	70	70	69	No
R99-26	61	66	69	Yes	--	--	68	68	68	No
R99-27	60	65	68	Yes	--	--	68	67	67	No
R99-28	61	66	66	Yes	--	--	66	65	65	No
R99-29	56	61	61	No	--	--	61	61	61	No
R99-30	57	62	62	No	62	61	61	61	60	No
R99-31	68	73	73	Yes	66	65	64	63	63	Yes
R99-32	68	73	70	Yes	65	64	63	63	62	Yes
R99-33	70	75	72	Yes	65	63	62	61	60	Yes
R99-34	62	67	62	No	61	60	60	58	57	No
R99-36	64	69	67	Yes	64	63	63	62	60	Yes
R99-37	68	73	72	Yes	66	64	63	62	61	Yes
R99-40	59	63	72	Yes	68	67	67	67	66	No
R99-41	58	62	73	Yes	68	67	66	66	65	No
R99-43C	58	62	75	Yes	68	67	66	65	65	No
R99-43A	57	61	70	Yes	65	65	64	64	63	No

dBA: A-weighted decibels.
–: .Not evaluated
[1] - Receivers that are noise measurement sites that are not located at an outdoor use area, or those subject to acquisitions, are not listed in this table because they do not represent a future outdoor use area and do not qualify for noise abatement.
Source: Developed from the *Noise Study Report* 2013.

Alternative C

Tables 3.39 through 3.41 show the results of traffic noise analysis for the project in 2038 with implementation of Alternative C. The analysis concluded that 401 outdoor use areas would be impacted by traffic noise levels. Figures 3-43 to 3-46, provided in Volume 2, show receiver locations.

Table 3.39 Traffic Noise Impact Analysis – Alternative C State Route 58 East of State Route 99

Noise Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative C (dBA)	Noise Impact Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)					Reasonable and Feasible?
					8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	
R58-4	67	70	74	Yes	73	71	70	68	67	Yes
R58-5	60	63	70	Yes	69	68	68	67	67	No
R58-6	58	61	68	Yes	63	63	62	61	60	Yes
R58-7	67	70	76	Yes	69	67	66	65	64	Yes
R58-7A	61	64	70	Yes	66	65	64	63	62	Yes
R58-8	68	71	76	Yes	69	68	66	65	64	Yes
R58-9	65	70	74	Yes	67	65	64	62	61	Yes
R58-10	65	70	74	Yes	66	65	64	63	62	Yes
R58-11	67	70	70	Yes	68	65	64	63	63	Yes
R58-12	65	68	68	Yes	66	66	61	60	59	Yes
R58-13	65	66	66	Yes	65	64	62	61	59	Yes
R58-15	69	70	68	Yes	67	65	62	61	60	Yes
R58-16	71	72	70	Yes	67	65	63	62	61	Yes
R58-17	66	67	66	Yes	65	64	63	61	59	Yes
R58-18	67	70	69	Yes	65	64	63	63	62	Yes
R58-19	57	60	59	No	59	59	58	58	58	No
R58-20	62	65	63	No	62	62	61	61	61	No
R58-20A	65	68	65	No	64	64	63	63	63	No
R58-21	66	69	72	Yes	66	65	65	64	64	Yes
R58-22	59	62	64	No	63	62	62	61	61	No
R58-23	52	55	57	No	56	56	55	55	55	No
R58-24	56	59	61	No	60	60	59	59	58	No
R58-24A	65	68	71	Yes	67	66	65	65	64	Yes
R58-25	57	60	63	No	61	61	60	60	60	No
R58-26	57	60	62	No	61	60	60	60	59	No
R58-27	57	60	63	No	61	60	60	59	59	No
R58-28	66	69	72	Yes	66	65	64	63	63	No
R58-29	59	62	65	No	61	61	60	60	59	No
R58-30	58	61	62	No	58	57	56	56	56	No
R58-32	59	62	63	No	59	58	57	57	57	No
R58-33	71	74	76	Yes	67	66	65	64	64	Yes
R58-34	66	70	73	Yes	67	67	66	65	65	Yes
R58-35	66	70	73	Yes	68	67	66	65	65	Yes
R58-36	68	72	76	Yes	68	66	65	64	63	Yes
R58-37	58	58	59	No	56	55	55	54	54	No

Table 3.39 Traffic Noise Impact Analysis – Alternative C State Route 58 East of State Route 99

Noise Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative C (dBA)	Noise Impact Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)					Reasonable and Feasible?
					8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	
R58-37A	71	71	74	Yes	67	66	65	65	64	Yes
R58-37B	69	69	71	Yes	65	65	64	63	63	Yes
R58-38	57	57	58	No	56	55	55	55	55	No
R58-39	63	63	65	No	60	59	59	60	61	Yes
R58-40	72	72	74	Yes	70	69	67	66	65	Yes
R58-41	68	68	70	Yes	65	65	64	63	63	Yes
R58-42	62	62	64	No	62	61	60	60	59	No
R58-42A	58	58	60	No	59	59	59	59	58	No
R58-43	62	65	66	Yes	64	63	63	63	63	No
R58-44	62	65	67	Yes	65	64	64	64	64	No
R58-45	63	62	64	No	61	60	60	59	59	Yes
R58-46	65	64	66	Yes	62	61	61	60	59	Yes
R58-47	61	60	62	No	61	60	60	60	59	No
R58-48	65	64	66	Yes	63	62	61	60	60	Yes
R58-49	69	72	74	Yes	68	66	65	64	63	Yes
R58-50	68	71	73	Yes	68	66	65	64	63	Yes
R58-51	60	63	65	No	62	60	58	57	56	Yes
R58-52	65	68	70	Yes	66	63	62	61	60	Yes
R58-54	69	72	74	Yes	69	67	66	65	64	Yes
R58-55	64	67	68	Yes	65	62	61	59	59	Yes
R58-56	70	72	73	Yes	71	67	66	65	64	Yes
R58-57	70	72	73	Yes	69	67	66	65	64	Yes
R58-58	62	64	66	Yes	63	62	61	59	58	Yes
R58-59	69	71	72	Yes	69	66	65	64	63	Yes
R58-60	66	69	70	Yes	68	64	63	62	62	Yes
R58-61	71	71	73	Yes	68	67	66	65	64	Yes
R58-62	71	71	73	Yes	71	67	66	65	64	Yes
R58-63	72	72	74	Yes	72	67	66	65	64	Yes
R58-64	63	66	68	Yes	66	63	63	61	60	Yes
R58-65	67	70	72	Yes	69	68	66	63	62	Yes
R58-66	67	70	72	Yes	68	68	65	62	61	Yes
R58-67	66	68	70	--	--	--	--	--	--	--
R58-68[2]	43	45	47	No	--	--	--	--	--	--
R58-69	62	65	67	Yes	65	65	65	64	64	No
R58-71	61	64	66	Yes	64	64	64	64	64	No
R58-73	68	71	73	Yes	69	68	66	65	64	Yes
R58-74	67	70	72	Yes	70	69	66	64	63	Yes
R58-75	73	76	78	Yes	73	70	68	67	66	Yes
R58-76	69	72	74	Yes	70	69	66	64	63	Yes
R58-77	65	68	70	Yes	66	64	62	61	60	Yes
R58-78	66	69	69	Yes	67	65	63	63	60	Yes
R58-79	63	66	67	Yes	65	64	63	61	59	Yes

Table 3.39 Traffic Noise Impact Analysis – Alternative C State Route 58 East of State Route 99

Noise Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative C (dBA)	Noise Impact Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)					Reasonable and Feasible?
					8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	
R58-80	70	70	70	Yes	68	65	64	62	62	Yes
R58-81	73	73	73	Yes	69	67	66	65	65	Yes
R58-82	64	64	64	No	62	60	59	58	57	No
R58-84	72	72	73	Yes	68	67	66	65	64	Yes
R58-85	72	72	73	Yes	68	66	66	65	64	Yes
R58-86	64	64	65	No	63	61	60	59	58	No
R58-87	71	71	73	Yes	68	66	65	65	64	Yes
R58-88	68	68	69	Yes	64	63	62	61	60	Yes
R58-89	66	66	67	Yes	64	62	61	60	59	Yes
R58-90	67	67	68	Yes	67	63	62	61	60	Yes
R58-91	67	67	68	Yes	66	64	62	61	60	Yes
R58-92	71	71	73	Yes	68	66	65	64	64	Yes
R58-93	70	70	72	Yes	67	65	64	63	62	Yes
R58-94	69	69	69	Yes	68	65	63	62	61	Yes
R58-95	67	67	68	Yes	66	63	62	61	60	Yes
R58-96	72	72	73	Yes	68	67	66	65	64	Yes
R58-97	69	69	69	Yes	65	64	62	61	61	Yes
R58-98	74	74	75	Yes	70	68	67	66	65	Yes
R58-99	67	67	69	Yes	67	65	64	63	62	Yes
R58-100	66	66	68	Yes	65	64	63	62	62	Yes
R58-101	62	66	68	Yes	64	63	62	61	60	Yes
R58-102	70	74	77	Yes	69	67	66	65	64	Yes
R58-103	59	63	65	No	62	61	60	58	57	No
R58-104	62	66	68	Yes	64	63	62	61	60	Yes
R58-105	59	63	64	No	63	62	61	59	58	No
R58-106	75	78	79	Yes	72	70	67	65	64	Yes
R58-107	67	71	73	Yes	70	69	66	64	62	Yes
R58-108	72	75	77	Yes	72	72	67	66	65	Yes
R58-109	72	75	77	Yes	72	71	67	66	65	Yes
R58-110	66	70	72	Yes	70	69	66	64	62	Yes
R58-111	73	76	77	Yes	74	71	69	68	67	Yes
R58-112	72	75	77	Yes	71	69	68	67	66	Yes
R58-113	71	74	75	Yes	72	71	67	65	65	Yes
R58-114	70	73	75	Yes	73	69	67	66	65	Yes
R58-115	71	74	76	Yes	71	69	68	67	66	Yes
R58-116	70	73	75	Yes	73	69	67	66	65	Yes
R58-117	67	70	72	Yes	70	66	64	63	62	Yes
R58-118	70	73	75	Yes	70	68	67	66	65	Yes
R58-119	66	69	71	Yes	69	65	63	62	61	Yes
R58-120	66	69	72	Yes	69	65	63	62	62	Yes
R58-121	67	70	72	Yes	70	66	64	63	62	Yes
R58-122	70	73	74	Yes	70	68	67	66	65	Yes

Table 3.39 Traffic Noise Impact Analysis – Alternative C State Route 58 East of State Route 99

Noise Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative C (dBA)	Noise Impact Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)					Reasonable and Feasible?
					8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	
R58-123	65	68	70	Yes	68	67	63	62	61	Yes
R58-124	66	69	71	Yes	69	68	64	63	62	Yes
R58-125	67	70	71	Yes	67	66	65	65	64	Yes
R58-126	65	68	70	Yes	69	64	63	62	62	Yes
R58-127	66	69	71	Yes	69	66	65	65	65	Yes
R58-128	65	69	70	Yes	67	66	65	64	63	Yes
R58-129	59	63	64	No	64	63	63	63	63	No
R58-131	65	69	70	Yes	65	64	63	62	61	Yes
R58-132	57	61	62	No	59	58	58	56	56	No
R58-133	69	73	75	Yes	68	67	66	65	64	Yes
R58-134	70	74	75	Yes	69	69	67	66	65	Yes
R58-135	58	62	63	No	61	60	59	57	57	No
R58-136	70	72	74	Yes	68	66	65	64	63	Yes
R58-137	58	60	61	No	59	58	57	56	54	No
R58-138	63	65	67	Yes	65	64	61	62	58	Yes
R58-139	70	72	74	Yes	68	66	64	63	61	Yes
R58-140	74	76	78	Yes	72	70	67	65	64	Yes
R58-141	67	69	71	Yes	68	67	63	61	60	Yes
R58-142	66	68	70	Yes	68	67	64	62	61	Yes
R58-143	73	75	77	Yes	71	67	65	64	63	Yes
R58-144	70	72	73	Yes	70	69	65	63	62	Yes
R58-145	67	70	71	Yes	69	68	64	62	61	Yes
R58-146	64	67	69	Yes	67	66	63	61	60	Yes
R58-147	68	71	72	Yes	69	68	64	62	61	Yes
R58-148	70	72	73	Yes	71	67	65	64	63	Yes
R58-149	69	71	73	Yes	71	66	65	64	63	Yes
R58-150	67	69	71	Yes	69	67	63	62	61	Yes
R58-151	65	68	70	Yes	67	67	63	62	61	Yes
R58-152	69	71	72	Yes	68	66	65	64	63	Yes
R58-153	69	71	73	Yes	68	66	65	64	63	Yes
R58-154	69	71	73	Yes	67	66	65	64	63	Yes
R58-155	64	67	70	Yes	67	67	63	62	61	Yes
R58-156	65	68	70	Yes	66	65	62	61	60	Yes
R58-157	68	70	72	Yes	66	65	63	63	62	Yes
R58-158	67	69	70	Yes	69	64	63	62	61	Yes
R58-159	69	71	72	Yes	67	65	64	63	62	Yes
R58-160	65	68	70	Yes	67	66	62	61	60	Yes
R58-161	65	68	70	Yes	66	66	62	61	60	Yes
R58-162	65	68	69	Yes	66	66	62	61	60	Yes
R58-163	62	65	67	Yes	64	63	60	58	58	Yes
R58-164	68	70	72	Yes	67	65	64	63	62	Yes
R58-165	68	70	72	Yes	67	65	64	63	62	Yes

Table 3.39 Traffic Noise Impact Analysis – Alternative C State Route 58 East of State Route 99

Noise Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative C (dBA)	Noise Impact Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)					Reasonable and Feasible?
					8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	
R58-166	63	66	68	Yes	65	63	61	60	59	Yes
R58-167	66	68	70	Yes	67	63	63	62	61	Yes
R58-168	66	68	70	Yes	66	63	63	62	61	Yes
R58-169	66	68	70	Yes	66	64	63	62	61	Yes
R58-170	66	68	70	Yes	66	64	63	62	61	Yes
R58-171	67	69	70	Yes	68	65	64	63	62	Yes
R58-172	67	69	70	Yes	69	66	65	64	64	Yes

dBA: A-weighted decibels.
--: Not evaluated

Notes:
1 – Receivers that are noise measurement sites that are not located at an outdoor use area, or those subject to acquisitions, are not listed in this table because they do not represent a future outdoor use area and do not qualify for noise abatement.
2 – Representative of an interior noise level since there were no exterior outdoor use areas.

Source: Developed from the *Noise Study Report* 2013.

Table 3.40 Traffic Noise Impact Analysis – Alternative C State Route 99 South of State Route 58

Noise Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative C (dBA)	Noise Impact Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)					Reasonable and Feasible?
					8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	
R99-1	59	63	63	No	62	62	62	62	62	No
R99-2	67	68	67	Yes	67	67	67	66	66	No
R99-3	58	59	59	No	56	56	56	55	55	No
R99-4	66	67	67	Yes	--	--	67	66	66	No
R99-5	65	66	66	Yes	--	--	66	65	64	No
R99-6	66	67	66	Yes	--	--	66	65	64	No
R99-7	66	67	67	Yes	--	--	65	64	63	No
R99-8	65	66	66	Yes	--	--	65	63	63	No
R99-9	62	63	63	No	--	--	--	--	--	--
R99-10	59	60	60	No	--	--	--	--	--	--
R99-10A	57	58	58	No	--	--	--	--	--	--
R99-11	60	63	64	No	62	62	61	61	61	No
R99-12	70	73	73	Yes	69	69	69	69	69	No
R99-13	68	71	72	Yes	69	68	68	68	68	No
R99-14	69	72	72	Yes	--	--	70	70	70	No
R99-15	62	65	66	Yes	--	--	66	66	66	No
R99-16	60	64	64	No	--	--	63	63	62	No
R99-17	64	68	68	Yes	--	--	67	66	65	No

Table 3.40 Traffic Noise Impact Analysis – Alternative C State Route 99 South of State Route 58

Noise Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative C (dBA)	Noise Impact Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)					Reasonable and Feasible?
					8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	
R99-18	65	69	69	Yes	--	--	68	67	66	No
R99-19	65	68	68	Yes	--	--	67	67	66	No
R99-20	56	59	59	No	--	--	58	58	58	No
R99-20A	62	65	65	No	--	--	64	63	62	No
R99-21	58	61	61	No	--	--	--	59	59	No
R99-21A	61	64	67	Yes	--	--	--	64	64	No
R99-21B	65	68	68	Yes	--	--	--	67	66	No
R99-21C	61	64	64	No	--	--	--	63	63	No
R99-22	60	63	64	No	--	--	--	62	62	No
R99-23	62	65	73	Yes	68	68	67	67	67	No
R99-25A	64	67	72	Yes	68	68	67	67	66	No
R99-26	61	66	69	Yes	--	--	67	67	67	No
R99-27	60	65	69	Yes	--	--	67	67	67	No
R99-28	61	66	69	Yes	--	--	67	67	67	No
R99-29	56	61	61	No	--	--	61	61	61	No
R99-30	57	62	65	No	64	64	63	63	62	No
R99-31	68	73	73	Yes	67	66	65	64	64	Yes
R99-32	68	73	73	Yes	66	66	65	64	63	Yes
R99-33	70	75	75	Yes	67	65	63	62	61	Yes
R99-34	62	67	68	Yes	63	63	62	62	61	Yes
R99-36	64	69	68	Yes	64	63	63	61	60	Yes
R99-37	68	73	73	Yes	67	65	64	63	62	Yes
R99-40A	59	63	67	Yes	65	64	64	64	64	No
R99-41A	58	62	68	Yes	65	64	64	63	63	No
R99-43B	60	64	77	Yes	69	68	67	66	65	No
R99-43A	57	61	67	Yes	64	63	62	62	61	No
R99-69	61	65	74	Yes	67	66	65	64	64	Yes
R99-70	59	63	66	Yes	63	63	62	62	61	Yes
R99-71	60	64	71	Yes	66	65	65	64	64	Yes

dBA: A-weighted decibels.
–: Not evaluated.

[1] - Receivers that are noise measurement sites that are not located at an outdoor use area, or those subject to acquisitions, are not listed in this table because they do not represent a future outdoor use area and do not qualify for noise abatement.

Source: Developed from the *Noise Study Report* 2013.

Table 3.41 Traffic Noise Impact Analysis – Alternative C State Route 99 North of State Route 58

Noise Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative C (dBA)	Noise Impact Requiring Abatement Consideration	Predicted Noise Level with Abatement (dBA)					Reasonable and Feasible?
					8-foot Wall	10-foot Wall	12-foot Wall	14-foot Wall	16-foot Wall	
R99-44	60	64	69	Yes	67	65	64	61	61	Yes
R99-45	60	64	69	Yes	66	64	64	62	61	Yes
R99-46	62	64	70	Yes	68	66	64	62	61	Yes
R99-47	61	63	71	Yes	68	65	64	63	62	Yes
R99-48	59	61	69	Yes	67	65	63	62	61	Yes
R99-49	60	62	72	Yes	68	65	64	63	63	Yes
R99-50	60	62	71	Yes	68	66	64	63	62	Yes
R99-51	59	61	69	Yes	67	65	64	61	60	Yes
R99-53	60	59	69	Yes	66	64	63	62	61	Yes
R99-54	60	59	68	Yes	64	63	63	62	61	Yes
R99-55	61	60	69	Yes	67	65	63	62	62	Yes
R99-56	60	59	69	Yes	67	66	65	65	64	Yes
R99-57	57	61	68	Yes	66	65	64	64	63	Yes
R99-58	56	60	66	Yes	--	--	--	--	64	No
R99-59	57	61	65	No	--	--	--	--	65	No
R99-60	59	63	63	No	--	--	--	--	--	--
R99-61	67	70	70	No	--	--	--	--	--	--
R99-62	64	67	71	Yes	71	71	71	71	70	No
R99-63	57	60	66	Yes	66	66	66	66	66	No
R99-64	59	62	68	Yes	68	68	68	68	68	No
R99-65	61	64	67	Yes	66	66	66	66	66	No
R99-66	62	65	70	Yes	70	69	69	69	69	No
R99-67	57	60	64	No	64	64	64	64	64	No
R99-68	60	63	68	Yes	68	68	68	68	68	No
R99-72	63	70	66	No	--	--	--	--	--	--
R99-73	68	74	74	Yes	68	68	66	65	65	No
R99-74	70	76	75	Yes	68	68	67	66	66	No
R99-75	69	75	75	Yes	69	68	68	68	67	No

dBA: A-weighted decibels.
--: Not evaluated

[1] - Receivers that are noise measurement sites that are not located at an outdoor use area, or those subject to acquisitions, are not listed in this table because they do not represent a future outdoor use area and do not qualify for noise abatement.

Source: Developed from the *Noise Study Report* 2013.

Westside Parkway (Segment 2)

A detailed noise study was done for Segment 2 of the Centennial Corridor project (Westside Parkway) in 2009, and a Noise Study Report was prepared in 2010. At the time of the traffic noise study analysis for Segment 1 of the Centennial Corridor Project, Segment 2 was under construction.

Traffic noise impact analysis for Westside Parkway used level-of-service C traffic volumes for each lane to predict the worst-case traffic noise impacts. In anticipation of the Centennial Corridor project, truck percentages from the Centennial Corridor project were used for the traffic noise impact analysis for Westside Parkway. There is the possibility that traffic noise would be slightly higher at some areas along the Westside Parkway due to the proposed Centennial Corridor alignment where an auxiliary lane would be added. Therefore, recommended heights of some of the soundwalls were raised by approximately 2 feet to provide additional traffic noise abatement for these areas. However, at locations where soundwalls were already 16 feet high, they were kept at that height. Soundwalls S335 and S314 were also extended 330 and 1,357 feet respectively to cover additional residences that were not impacted by traffic noise levels under the Westside Parkway project due to existing property walls.

The Westside Parkway traffic noise analysis used three general lanes in the westbound direction from Coffee Road to Calloway Drive. As part of the Centennial Corridor project, an auxiliary lane would be added to the westbound travel lanes of Westside Parkway from Coffee Road to Calloway Drive. Because soundwalls in this area were built at least 2 feet higher than what was needed to provide feasible abatement for the three general lanes, they would also be effective in providing abatement when an auxiliary lane is added as part of the Centennial Corridor project. Figure 3-47 in Volume 2 shows the area between Coffee Road to Calloway Drive where a new auxiliary lane would be added and shows where soundwalls are being built as part of the Westside Parkway project.

No-Build Alternative

Traffic noise impacts would occur along the various roadways even without project implementation, as shown in Tables 3.33 to 3.41 (“Predicted Noise Level with the No-Build Alternative” column) because traffic noise levels would approach or exceed Noise Abatement Criteria. However, no noise abatement would be considered without the project.

Avoidance, Minimization, and/or Noise Abatement Measures

Noise abatement is considered for locations where traffic noise levels would approach or exceed the noise abatement criterion or there is a noise level increase of 12 dB. A barrier must meet both the feasible and reasonable criteria to be built. Feasibility of noise abatement is an engineering concern. A minimum 5-decibel reduction in the future noise level must be achieved for an abatement measure to be considered feasible. The preliminary reasonableness determination is made first by achieving the noise reduction design goal. The design goal is that a barrier must be predicted to provide at least 7 dB of noise reduction at one or more benefited receptors for the barrier to be considered reasonable. Second, for a barrier to be considered reasonable, construction cost must be within the established allowance per benefited receptor. Finally, the viewpoints of benefitted receptors (including property owners and residents of the benefitted receptors) must be taken into account for a barrier to be considered reasonable.

There are six existing soundwalls along State Route 99 that are within the project limits. For areas where space is needed for the expansion of traffic lanes, in-kind replacement of some of the existing soundwalls would be required. In-kind replacement occurs when an existing soundwall must be removed, relocated, and replaced in-kind along the project alignment where space is needed for the proposed project's additional lanes and/or required safety features; such replacement (construction) is done regardless of cost. Existing soundwalls could be replaced only by higher soundwalls if an additional 5-decibel noise reduction can be achieved. In most cases, increasing the height of a 10- or 12-foot-high soundwall to the maximum height of 16 feet would not provide an additional 5-decibel noise reduction. This is the main reason the heights of some existing soundwalls were not increased but were replaced in-kind at a new location at the original height.

Based on the noise abatement study, 23 soundwalls identified under Alternative A would provide feasible abatement for 496 frequent outdoor use areas. Under Alternative B, 28 soundwalls would provide feasible abatement for 445 frequent outdoor use areas. Under Alternative C, 22 soundwalls would provide feasible abatement for 330 frequent outdoor use areas.

The following noise abatement would apply to the project:

N-1 Based on the studies completed, Caltrans intends to incorporate noise abatement in the form of soundwalls that meet the criteria for reasonableness and feasibility. The recommended soundwalls would reduce the traffic noise levels by at least 5 dB at the impacted receivers, would meet the design goal by providing a 7-decibel reduction for at least one receiver, and would cost less than the reasonableness cost allowance. If during final design, conditions have substantially changed, noise abatement may not be necessary. The final decision of the noise abatement will be made upon completion of the project design and the public involvement processes.

Prior to the formal selection of the Preferred Alternative and approval of the project, all property owners of the benefitted receptors located adjacent to each of the proposed soundwalls will be given an opportunity to vote if they want the soundwall to be constructed to abate the traffic noise in their area or not. For soundwalls located within state right-of-way, if more than 50 percent of the votes from responding benefitted receptors oppose the abatement, the abatement will not be considered reasonable and will not be built. If the soundwall is to be located on private property (or properties), 100 percent of the property owners must vote in favor of the soundwall for it to be constructed. However, at this time, none of the recommended soundwalls are on private property.

The *Noise Abatement Decision Report* (May 2013) determines the reasonableness of the feasible soundwalls presented in the *Noise Study Report*. When cost allows during the reasonableness determination, the minimum heights shown in the *Noise Study*

Report may be raised. Raising the heights of soundwalls may increase the number of benefited receivers. All benefited areas, even non-impacted areas, with feasible abatement contribute to the calculation of the reasonableness allowance of a feasible soundwall. Soundwalls that are reasonable are recommended for the project.

Based on the studies completed to date, Caltrans intends to incorporate noise abatement in the form of soundwalls ranging in height from 8 to 16 feet at 23 locations for Alternative A, 28 locations for Alternative B, and 22 locations for Alternative C. Soundwalls would have a total length of 37,997 feet, 38,014 feet, and 30,696 feet for Alternatives A, B, and C, respectively. Calculations based on preliminary design data indicate that the proposed soundwalls would reduce noise levels by at least 5 decibel and would meet design goal of 7 decibel reduction at least at one receiver per soundwall. The estimated cost of soundwalls for Alternative A is $11,850,500, Alternative B is $13,123,500, and Alternative C is $9,181,500. If conditions have substantially changed during final design, noise abatement may not be necessary. The final decision of the noise abatement will be made upon completion of the project design and the public involvement processes.

Soundwalls Unique to Each Build Alternative

Alternative A

Centennial Corridor West of State Route 99

Soundwall S469 (Alternative A–Area 1). Soundwall S469 is on the shoulder of westbound Centennial Corridor and would provide feasible traffic noise abatement for eight multi-family residences and one recreational area in the Creek Side Apartments complex in Alternative A-Area 1 (see Figure 3-35 in Volume 2; Receivers RA-1 through RA-4). Measurements taken in this area indicate that the existing noise levels are between 60 and 73 dBA. The future noise levels at these receivers without the project are predicted to be the same as the existing noise levels. The future traffic noise levels at these receivers with the project are predicted to be between 67 and 75 dBA. Since the predicted future noise levels exceed 67 dBA, the noise abatement criterion for residential uses, the multi-family residences represented by these receivers would be impacted by traffic noise levels. A 12-foot-high soundwall would provide a 5-decibel reduction in traffic noise levels; however, the design goal of a 7-decibel reduction in traffic noise levels would not be achieved by this soundwall. Since Soundwall S469 does not meet the design goal at any of the receivers, this soundwall is determined not reasonable and therefore not recommended.

Soundwall S474 (Alternative A–Area 2). Soundwall S474 is on the shoulder along eastbound Centennial Corridor and would provide feasible traffic noise abatement for nine single-family residences, 62 multi-family residences, and one recreational area between Truxtun and Lennox Avenues (see Figure 3-35 in Volume 2; Receivers RA-6 through RA-27) in Alternative A-Area 2. The existing noise levels in this area range from 50 to 52 dBA. The future noise levels at these locations without the project are predicted to be the same as the existing noise levels. The future traffic noise level at these locations with the project is predicted to range from 61 to 74 dBA.

The predicted future traffic noise levels for all receivers except for Receivers RA-9, RA-10, and RA-26 substantially exceed existing worst-hour noise levels with an increase of at least 12 dB; therefore, these receivers would be impacted by traffic noise levels. A 14-foot-high soundwall would be needed to achieve feasible and reasonable traffic noise abatement at Receivers RA-6 through RA-8 and RA-11 through RA-25. The total cost allowance for this soundwall, calculated in accordance with the Caltrans Traffic Noise Analysis Protocol, is $3,960,000. The current estimated cost of the soundwall is $726,000. Therefore, this soundwall is recommended.

Soundwall S499 (Alternative A–Area 3). Soundwall S499 is on the shoulder along eastbound Centennial Corridor and would provide feasible traffic noise abatement for three single-family residences and 51 multi-family residences between California Avenue and Stockdale Highway (see Figure 3-35 in Volume 2; Receivers RA-28 through RA-39) in Alternative A-Area 3. The existing noise levels in this area range from 52 to 54 dBA. The future noise levels at these locations without the project are predicted to be the same as the existing noise levels. The future traffic noise level at these locations with the project is predicted to range from 62 to 72 dBA. The predicted future traffic noise levels for all receivers except for Receivers RA-33 through RA-35 substantially exceed existing worst-hour noise levels (increase of 12 dB or more); therefore, these receivers would be impacted by traffic noise levels. A 14-foot-high soundwall would be needed to achieve feasible and reasonable traffic noise abatement at Receivers RA-28 through RA32 and RA-36 through RA-39. The total cost allowance for this soundwall, calculated in accordance with the Caltrans Traffic Noise Analysis Protocol, is $2,970,000. The current estimated cost of the soundwall is $400,000; therefore, this soundwall is recommended.

Soundwall S526 (Alternative A–Area 5). Soundwall S526 is on the shoulder along eastbound Centennial Corridor, the right-of-way line along the connector to southbound State Route 99, and between the existing infiltration basin and the residences it protects (see Figure 3-35 in Volume 2). Soundwall S526 would provide feasible traffic noise abatement for 43 single-family residences and three multi-family residences between Stockdale Highway and State Route 99 (Receivers RA-50 through RA-77) in Alternative A-Area 5. The existing noise levels in this area range from 52 to 56 dBA. The future noise levels at these locations without the project are predicted to be the same as the existing noise levels. The future traffic noise level at these locations with the project is predicted to range from 62 to 72 dBA. The predicted future traffic noise levels for all receivers except for Receivers RA-53, RA-55, and RA-56 either approach 67 dBA, the noise abatement criterion for residential uses, or substantially exceed the existing noise levels (increase of 12 dB or more). Therefore, these receivers would be impacted by traffic noise levels. A soundwall varying in height from 10 to 16 feet would be needed to achieve feasible and reasonable traffic noise abatement at the impacted receivers. The total cost allowance for this soundwall, calculated in accordance with the Caltrans Traffic Noise Analysis Protocol, is $2,530,000. The current estimated cost of the soundwall is $1,752,000. Therefore, this soundwall is recommended.

Soundwall S531 (Alternative A–Area 4). Soundwall S531 is on the shoulder along westbound Centennial Corridor and would provide feasible traffic noise abatement for 11 single-family residences between Montclair Street and Stine Road in Alternative A-Area 4 (see Figure 3-35 in Volume 2; Receivers RA-41 through RA-49). The existing noise levels in this area range from 59 to 63 dBA. The future noise levels at these locations without the project are predicted to be the same as the existing noise levels. The future traffic noise level at these locations with the project is predicted to range from 69 to 71 dBA. Since the predicted future traffic noise levels for all receivers exceed 67 dBA, the noise abatement criterion for residential uses, these receivers would be impacted by traffic noise levels. A 12-foot-high soundwall would be needed to achieve feasible and reasonable traffic noise abatement at Receivers RA-41 through RA-47 and RA-49. The total cost allowance for this soundwall, calculated in accordance with the Caltrans Traffic Noise Analysis Protocol, is $605,000. The current estimated cost of the soundwall is $497,000. Therefore, this soundwall is recommended.

State Route 99 South of State Route 58

Soundwall S656 (State Route 99–Area 3). Soundwall S656 is on the right-of-way line west of Wible Road and would provide feasible traffic noise abatement for two single-family residences and one motel between Belle Terrace and Ming Avenue in State Route 99-Area 3 (see Figure 3-36 in Volume 2; Receivers R99-11 through R99-13). Measurements taken in this area indicate that the existing traffic noise level at this location is between 60 and 70 dBA. The future traffic noise levels at these receivers without the project are predicted to be between 63 and 73 dBA. The future traffic noise levels at these receivers with the project are predicted to be between 67 and 74 dBA. Since the predicted future traffic noise level exceeds 67 dBA, the noise abatement criterion for residential uses and 72 dBA, the noise abatement criterion for motels, the single-family residences and motel represented by these receivers would be impacted by traffic noise levels. A 10-foot-high soundwall would provide a 5-decibel reduction in traffic noise levels; however, the design goal of a 7-decibel reduction in traffic noise levels would not be achieved by this soundwall. Since Soundwall S656 does not meet the design goal at any of the receivers, the soundwall is determined not reasonable. Therefore, it is not recommended.

Receivers R99-17 through R99-19. Traffic noise impacts would occur at outdoor use areas associated with five single-family residences along southbound State Route 99 north of Ming Avenue represented by Receivers R99-17 through R99-19 (State Route 99-Area 4; see Figure 3-36 in Volume 2). The portion of existing Soundwall SW2 in front of these residences would remain under Alternative A. The soundwall analysis from the *Noise Study Report* demonstrates that raising the height of the existing soundwall in this area would not provide an additional 5 dB or more of noise reduction at any of the impacted receivers, so a heightened soundwall would not provide feasible traffic noise abatement. Feasible traffic noise abatement cannot be attained because the existing soundwall already provides much of the noise reduction potential of a soundwall.

State Route 58 East of State Route 99

Soundwall S88 (State Route 58–Area 2). Soundwall S88 is on the edge of the shoulder along the State Route 99/State Route 58 northbound to eastbound connector and would provide feasible traffic noise abatement for 12 single-family residences near Stephens Drive in State Route 58-Area 2 (see Figures 3-36 and 3-37 in Volume 2; Receivers R58-11 through R58-17). The existing traffic noise levels in this area range from 65 to 71 dBA. The future traffic noise level at these locations without the project is predicted to range from 67 to 72 dBA. The future traffic noise level at these locations with the project is predicted to range from 67 to 73 dBA. Since the predicted future traffic noise levels at all receivers meet or exceed 67 dBA, the noise abatement criterion for residential uses, these receivers would be impacted by traffic noise levels. A 12-foot-high soundwall would be needed to achieve feasible and reasonable traffic noise abatement at Receivers R58-11 through R58-17. The total cost allowance for this soundwall, calculated in accordance with the Caltrans Traffic Noise Analysis Protocol, is $660,000. The current estimated cost of the soundwall is $435,000. Therefore, this soundwall is recommended.

Soundwall S106 (State Route 58–Area 2). Soundwall S106 is on the existing right-of-way along eastbound State Route 58 and would provide feasible traffic noise abatement for eight single-family residences and a recreational area near Hughes Lane in State Route 58-Area 2 (see Figure 3-37 in Volume 2; Receivers R58-18 through R58-24A). The existing traffic noise levels in this area range from 52 to 67 dBA. The future traffic noise level at these locations without the project is predicted to range from 55 to 70 dBA. The future traffic noise level at these locations with the project is predicted to range from 57 to 75 dBA, approaching or exceeding 67 dBA, the noise abatement criterion for residential uses. So, the receivers would be impacted by traffic noise levels. A soundwall varying in height from 8 to 12 feet would be needed to achieve feasible and reasonable traffic noise abatement at Receivers R58-18 through R58-24A. The total cost allowance for this soundwall, calculated in accordance with the Caltrans Traffic Noise Analysis Protocol, is $495,000. The current estimated cost of the soundwall is $471,000. Therefore, this soundwall is recommended.

Alternative B

Centennial Corridor West of State Route 99

Soundwalls S509 and S519 (Alternative B–Area 2). Soundwalls S509 and S519, working as a system, would be placed on the shoulder and right-of-way line, respectively, along the eastbound Centennial Corridor. Soundwalls in Alternative B-Area 2 would provide feasible traffic noise abatement for 14 single-family residences, 15 multi-family residences, and Stockdale Christian School between California Avenue and Marella Way (see Figure 3-39 in Volume 2; Receivers RB-36 through RB-44). The existing noise level in this area is 52 dBA. Future traffic noise levels at these locations, with the project, are predicted to range from 61 to 76 dBA. The predicted future traffic noise levels, with an increase of at least 12 dB for all receivers except Receivers RB-38 and RB-43, substantially exceed the existing worst-hour noise levels. So, these receivers would be impacted by traffic noise levels. A

14-foot-high soundwall would be needed to achieve feasible and reasonable traffic noise abatement for the effected receivers. The total cost allowance for this soundwall system, calculated in accordance with the Caltrans Traffic Noise Analysis Protocol, is $1,650,000. The current estimated cost of this soundwall system is $643,000. Therefore, this soundwall system is recommended.

Soundwall S518 (Alternative B–Area 1). Soundwall S518 is in the shoulder and right-of-way line on the westbound Centennial Corridor, and would provide feasible traffic noise abatement for 19 single-family residences between California Avenue and Marella Way in Alternative B-Area 1 (see Figure 3-39 in Volume 2; Receivers RB-5 through RB-18). Existing noise levels in this area range from 53 to 58 dBA. Future traffic noise levels at these locations, without the project, are predicted to range from 53 to 58 dBA. Future traffic noise levels at these locations, with the project, are predicted to range from 60 to 75 dBA. Predicted future traffic noise levels, with an increase of at least 12 dB, substantially exceed the existing worst-hour noise levels. A soundwall varying in height from 14 to 16 feet would be needed to achieve feasible and reasonable traffic noise abatement for the impacted receivers, except for two single-family residences represented by Receiver RB-16. The existing noise level at Receiver RB-16 is 53 dBA and would be 68 dBA with Soundwall S518. Failure to achieve 5 dBA in noise reduction at Receiver RB-16 is attributed to the absence of abatement at the Marella Way overcrossing, exposing the receiver to Centennial Corridor traffic. Total cost allowance for this soundwall, calculated in accordance with the Caltrans Traffic Noise Analysis Protocol, is $1,045,000. The current estimated cost of the soundwall is $667,000. Therefore; this soundwall is recommended.

Soundwall S529 (Alternative B–Area 4). Soundwall S529 is on right-of-way line of the eastbound Centennial Corridor between Marella Way to La Mirada Drive in Alternative B-Area 4 and would provide feasible traffic noise abatement for three single-family residences and Centennial Park (see Figure 3-39 in Volume 2; Receivers RB-45 through RB-51). Measurements taken indicate that the existing noise level ranges from 51 to 53 dBA. Future traffic noise levels at these locations, without the project, are predicted to range from 51 to 53 dBA. Future traffic noise levels at these locations, with the project, are predicted to range from 61 to 69 dBA. Receivers for which the predicted future traffic noise level approaches or exceeds 67 dBA, the noise abatement criterion for residential and recreational uses, would be impacted by traffic noise levels. Receivers RB-45, RB-47, RB-48, and RB-51 are below the noise abatement criterion. To achieve a 5-decibel reduction at Receivers RB-46, RB-49, and RB-50, a soundwall varying in height from 8 to 12 feet would be needed. A 5-decibel reduction could not be achieved for RB-46.

Compared to the existing noise levels, with the proposed project, Centennial Park (represented by Receivers RB-45 to RB-47) would experience noise increases of 8 to 14 dB under Alternative B by 2038. The existing noise level at the park is 53 dBA (equal to a quiet urban daytime setting) and future predicted traffic noise levels would range from 61 to 67 dBA (similar to heavy traffic 300 feet away). Soundwall S529, with a height combination of 8 to 12 feet, was considered on the south side of the

proposed Centennial freeway between Marella Way and La Mirada Drive to provide traffic noise abatement for the park and several residences. This soundwall would provide a feasible 5-decibel noise reduction for three houses, but, due to the gap in the Marella Way soundwall, only a 1-decibel noise reduction at Centennial Park.

Even though Soundwall S529 was considered feasible, it was not considered reasonable under Caltrans noise abatement guidance. The wall could not provide a 7-decibel noise reduction for at least one receiver, a soundwall design goal. In addition, its construction cost would be more than the reasonable allowance, as established by Caltrans procedures. Based on these reasons, Soundwall S529 would have not been recommended. However, the Caltrans Highway Design Manual, May 2012, Section 1102.4[2], Gap Closures, notes that when short gaps exist between areas qualifying for a noise barrier, the closure of these gaps should be considered on a project-by-project basis. Not recommending Soundwall S529 at Centennial Park would create a 950-foot-wide gap south of the proposed freeway between Marella Way and La Mirada Drive. This is the only area along Alignment B where no traffic noise abatement would be provided for a frequent outdoor use area. The following areas would not receive noise abatement: about 1,700 feet north of the gap; about 4,200 feet south of the gap; and about 4,000 feet on the opposite side of the proposed freeway with no gaps but the street crossings.

The total cost allowance for this soundwall, calculated in accordance with the Caltrans Traffic Noise Analysis Protocol, is $165,000. The current estimated cost of the soundwall is $328,000. Therefore, this soundwall was determined not reasonable. Considering that traffic noise abatement is recommended, however, for all the impacted frequent outdoor use areas along Alternative B west of State Route 99, with the exception of this area, it is recommended that Soundwall S529 be built to close the 950-foot gap. The gap closure would ensure soundwall continuity and minimize traffic noise impacts to frequent outdoor use areas at Centennial Park.

Soundwall S530 (Alternative B–Area 3). Soundwall S530 on the right-of-way line along the westbound Centennial Corridor and would provide feasible traffic noise abatement for eight single-family residences between Marella Way and La Mirada Drive in Alternative B-Area 3 (see Figure 3-39 in Volume 2; Receivers RB-19 through RB-20). The existing noise levels in this area range from 51 to 53 dBA. Future traffic noise levels at these locations with the project are predicted to be 65 dBA. With an increase of at least 12 dB, predicted future traffic noise levels would substantially exceed the existing worst-hour noise levels, adversely impacting the receivers. A soundwall varying in height from 10 to 12 feet would be needed to achieve feasible and reasonable traffic noise abatement at Receivers RB-19 through RB-20. The total cost allowance for this soundwall, calculated in accordance with the Caltrans Traffic Noise Analysis Protocol, is $440,000. The current estimated cost of the soundwall is $379,000. Therefore, this soundwall is recommended.

Soundwalls S536, S544, and S552 (Alternative B–Area 3). Soundwalls S536, S544, and S552, working as a system, would be on the right-of-way line and shoulder along the westbound Centennial Corridor. The walls would provide feasible traffic noise

abatement for 19 single-family residences between La Mirada Drive and Stockdale Highway in Alternative B-Area 3 (see Figure 3-39 in Volume 2; Receivers RB-21 through RB-32). The existing noise level in this area is 51 dBA. Future traffic noise levels at these locations, without the project, are predicted to be the same as the existing noise level. Future traffic noise levels at these locations, with the project, are predicted to range from 62 to 77 dBA. With at least a 12-decibel increase, predicted future traffic noise levels for all receivers, except Receiver RB-21, substantially exceed existing worst-hour noise levels. A soundwall varying in height from 12 to 14 feet would be needed to achieve feasible and reasonable traffic noise abatement at Receivers RB-22 through RB-32. Total cost allowance for this soundwall system, calculated in accordance with the Caltrans Traffic Noise Analysis Protocol, is $1,045,000. The current estimated cost of the soundwall system is $616,000. Therefore, this soundwall system is recommended.

Soundwalls S537 and S555 (Alternative B–Area 4 and Area 5). Soundwalls S537 and S555 would work as a system. Soundwall S537 would be on the right-of-way line. Soundwall S555 would be partially on the shoulder along the eastbound Centennial Corridor, the right-of-way line along the connector to southbound State Route 99, as well as between the existing infiltration basin and residences the wall protects. Soundwalls S537 and S555 would provide feasible traffic noise abatement for 51 single-family residences between Stockdale Highway and State Route 99 in Alternative B-Area 4 and Area 5 (see Figure 3-39 in Volume 2; Receivers RB-52 through RB-87). Existing noise levels in this area range between 51 and 63 dBA. Future traffic noise levels at these locations, without the project, are predicted to range from 51 to 73 dBA. Future traffic noise levels at these locations, with the project, are predicted to range from 58 to 76 dBA. Receivers would be impacted by traffic noise levels when predicted future traffic noise levels either approach or exceed 67 dBA, the noise abatement criterion for residential uses, or exceed existing worst-hour noise levels with an increase of at least 12 dB. A soundwall varying in height from 12 to 16 feet would be needed to achieve feasible and reasonable traffic noise abatement at the impacted receivers, except for six single-family residences represented by Receivers RB-65, RB-67, and RB-69. Soundwall S555 on the edge of the shoulder would not provide 5 dB or more of traffic noise reduction at these receivers. The failure to achieve a 5-dB noise reduction at those receivers is attributed to their exposure to the high traffic volume on Stockdale Highway which hinders the efficiency of the shoulder soundwall. The total cost allowance for this soundwall system, calculated in accordance with the Caltrans Traffic Noise Analysis Protocol, is $2,805,000. The current estimated cost of the soundwall system is $1,774,000; therefore, this soundwall system is recommended.

Receivers RB-34 and RB-35. Traffic noise impacts would occur at the frequent outdoor use areas of four first-row single-family residences along the northbound side of the Centennial Corridor just north of Stockdale Highway in Alternative B-Area 3 (see Figure 3-40 in Volume 2). These impacts would occur despite the addition of Soundwalls S544 and S552 along the northbound shoulder of the Centennial Corridor and shoulder of the northbound State Route 99 connector. Because of high traffic volume on Stockdale Highway, the S544 and S552 soundwall system would not

provide 5 dB or more of traffic noise reduction for these single-family residences. Therefore, these soundwalls are not feasible.

State Route 99 South of State Route 58

Soundwall S656 (State Route 99–Area 3). Soundwall S656 is on the right-of-way line west of Wible Road by two single-family residences and one motel between Belle Terrace and Ming Avenue in State Route 99-Area 3 (see Figure 3-40 in Volume 2; Receivers R99-11 through R99-13). Measurements taken indicate that existing traffic noise levels at this location are 60 to 70 dBA. Future traffic noise levels at these receivers, without the project, are predicted to be 63 to 73 dBA. Future traffic noise levels at these receivers, with the project, are predicted to be 67 to 74 dBA. Since the predicted future traffic noise levels for receivers in this area exceed the noise abatement criteria (67 dBA for single-family residences and 72 dBA for motels), the single-family residences and motel represented by these receivers would be impacted by traffic noise levels. A 10-foot-high soundwall would provide a 5-decibel reduction in traffic noise levels; however, the design goal of a 7-decibel reduction in traffic noise levels would not be achieved by this soundwall. Since Soundwall S656 does not meet the design goal at any of the receivers, the soundwall is determined not reasonable. Therefore, this soundwall is not recommended.

Receivers R99-17 through R99-19. Traffic noise impacts would occur at outdoor use areas associated with five single-family residences along southbound State Route 99 north of Ming Avenue represented by Receivers R99-17 through R99-19 in State Route 99-Area 4 (see Figure 3-40 in Volume 2). The portion of existing Soundwall SW2 in front of these residences would remain under Alternative B. The soundwall analysis from the *Noise Study Report* indicates that raising the height of the existing soundwall in this area would not provide an additional 5 dB or more of noise reduction at any of the impacted receivers, so a higher soundwall would not provide feasible traffic noise abatement. Because the existing soundwall already achieves much of the noise reduction potential of a soundwall, feasible traffic noise abatement cannot be attained.

State Route 58 East of State Route 99

Soundwall S194 (State Route 58–Area 2). Soundwall S194 is on the edge of the shoulder along the State Route 99/State Route 58 northbound to eastbound connector and would provide feasible traffic noise abatement for 12 single-family residences near Stephens Drive in State Route 58-Area 2 (see Figure 3-41 in Volume 2; Receivers R58-11 through R58-17). Existing traffic noise levels in this area are 65 to 71 dBA. Future traffic noise levels at these locations, without the project, are predicted to be 66 to 72 dBA. Future traffic noise levels at these locations, with the project, are predicted to be 67 to 71 dBA. Since all predicted future traffic noise levels meet or exceed 67 dBA, the noise abatement criterion for residential uses, receivers in this area would be impacted by traffic noise levels. A 12-foot-high soundwall would be needed to achieve feasible and reasonable traffic noise abatement at Receivers R58-11 through R58-17. The total cost allowance for this soundwall, calculated in accordance with the Caltrans Traffic Noise Analysis Protocol, is

$660,000. The current estimated cost of the soundwall is $447,000; therefore, this soundwall is recommended.

Soundwall S106 (State Route 58–Area 2). Soundwall S106 is on the existing right-of-way along eastbound State Route 58 and would provide feasible traffic noise abatement for 15 single-family residences and a recreational area near Hughes Lane in State Route 58-Area 2 (see Figure 3-41 in Volume 2; Receivers R58-18 through R58-24A). Existing traffic noise levels in this area are 52 to 66 dBA. Future traffic noise levels at these locations, without the project, are predicted to be 55 to 69 dBA. Future traffic noise levels, with the project, are predicted to be 58 to 76 dBA. Receivers in this area for which the predicted future traffic noise level approaches or exceeds 67 dBA, the noise abatement criterion for residential uses, would be impacted by traffic noise levels. A 14-foot-high soundwall would be needed to achieve feasible and reasonable traffic noise abatement at Receivers R58-18 through R58-24A. The total cost allowance for this soundwall, calculated in accordance with the Caltrans Traffic Noise Analysis Protocol, is $880,000. The current estimated cost of the soundwall is $628,000. The soundwall, therefore, is recommended.

Alternative C

Centennial Corridor West of State Route 99

Soundwall S561 (State Route 99–Area 7). Soundwall S561 is on the shoulder along the eastbound Centennial Corridor and would provide feasible traffic noise abatement for 21 single-family residences, four multi-family residences, and Saunders Park with three outdoor use areas between existing State Route 58 and California Avenue in State Route 99-Area 7 (see Figures 3-43 and 3-44 in Volume 2; Receivers R99-44 through R99-57). Existing traffic noise levels in this area are 57 to 62 dBA. Future traffic noise levels, without the project, are predicted to be 58 to 64 dBA. Future traffic noise levels, with the project, are predicted to be 68 to 72 dBA. Since predicted future traffic noise levels exceed 67 dBA, the noise abatement criterion for residential uses, receivers in this area would be impacted by traffic noise levels. A soundwall varying in height from 10 to 16 feet would be needed to achieve feasible and reasonable traffic noise abatement at Receivers R99-44 through R99-57. Total cost allowance for this soundwall, calculated in accordance with the Caltrans Traffic Noise Analysis Protocol, is $1,540,000. The current estimated cost of the soundwall is $1,017,000; therefore, this soundwall is recommended.

Soundwall S683 (State Route 99–Area 6). Soundwall S683 is on the right-of-way line along southbound State Route 99 and northern property line of an existing infiltration basin. This soundwall would provide feasible traffic noise abatement for one single-family residence and seven multi-family residences between Belle Terrace and existing State Route 58 in State Route 99-Area 6 (see Figure 3-44 in Volume 2; Receivers R99-69 through R99-71). Existing traffic noise levels in this area are 59 to 61 dBA. Future traffic noise levels, without the project, are predicted to be 63 to 65 dBA. Future traffic noise levels, with the project, are predicted to be 66 to 74 dBA. Since all predicted future traffic noise levels either approach or exceed 67 dBA, the noise abatement criterion for residential uses, receivers in this area would be

impacted by traffic noise levels. A 16-foot-high soundwall would be needed to achieve feasible and reasonable traffic noise abatement at Receivers R99-69 through R99-71. The total cost allowance for this soundwall, calculated in accordance with the Caltrans Traffic Noise Analysis Protocol, is $440,000. The current estimated cost of the soundwall is $366,000. The soundwall, therefore, is recommended.

Receivers R99-11 through R99-13. Traffic noise impacts would occur at outdoor use areas associated with two single-family residences and one motel along northbound State Route 99 between Ming Avenue and Belle Terrace (Receivers R99-11 through R99-13; see Figure 3-44 in Volume 2). The soundwall analysis from the Noise Study Report demonstrates that a soundwall at the right-of-way line would not provide feasible traffic noise abatement under Alternative C. Feasible traffic noise abatement cannot be achieved because a prospective soundwall could not provide at least 5 dB of noise reduction. The soundwall, therefore, is not feasible.

Receivers R99-17 through R99-19. Traffic noise impacts would occur at outdoor use areas associated with five single-family residences along southbound State Route 99 north of Ming Avenue in State Route 99-Area 4 (Receivers R99-17 through R99-19; see Figure 3-44 in Volume 2). Existing Soundwall SW2 in front of these residences would remain under Alternative C. The soundwall analysis from the *Noise Study Report* demonstrates that raising the height of the existing soundwall in this area would not provide an additional 5-decibel or more of noise reduction at any of the impacted receivers. Because the existing soundwall already achieves much of the noise reduction potential of a soundwall, a heightened soundwall would not provide feasible traffic noise abatement.

State Route 99 South of State Route 58

Soundwall S610 (State Route 58–Area 2). Soundwall S610 would be on the right-of-way line along eastbound State Route 58 between Dixon Avenue and Hughes Lane in State Route 58-Area 2 (Receivers R58-21 through R58-24A; see Figure 3-45 in Volume 2). Existing traffic noise levels in this area are 52 to 66 dBA. Future traffic noise levels, without the project, are predicted to be 55 to 69 dBA. Future traffic noise levels, with the project, are predicted to be 57 to 72 dBA. Since predicted future traffic noise levels exceed 67 dBA, the noise abatement criterion for residential uses, receivers in this area would be impacted by traffic noise levels. A 10-foot-high soundwall would be needed to achieve feasible and reasonable traffic noise abatement for three impacted single-family residences and the pool at The Villas at Hughes Lane Apartments. The total cost allowance for this soundwall, calculated in accordance with the Caltrans Traffic Noise Analysis Protocol, is $220,000. The current estimated cost of the soundwall is $286,000. The soundwall was determined not reasonable and therefore not recommended.

State Route 99 North of State Route 58

Soundwall S815 (State Route 99–Area 11). Soundwall S815 is on the shoulder along southbound State Route 99 and the Rosedale Highway off-ramp and would provide feasible traffic noise abatement for two single-family residences between Rosedale

Highway and Gilmore Avenue in State Route 99-Area 11 (Receivers R99-73 and R99-74; see Figure 3-43 in Volume 2). Measurements taken within this area indicate that existing traffic noise levels are 68 to 70 dBA. Future traffic noise levels, without the project, are predicted to be 74 to 76 dBA. Future traffic noise levels at these locations, with the project, are predicted to be 74 to 75 dBA. Since the predicted future traffic noise levels exceed 67 dBA, the noise abatement criterion for residential uses, receivers in this area would be impacted by traffic noise levels. To achieve a 5-decibel reduction at Receivers R99-73 and R99-74, a 10-foot-high soundwall would be needed. Total cost allowance for this soundwall, calculated in accordance with the Caltrans Traffic Noise Analysis Protocol, is $110,000. The current estimated cost of the soundwall is $206,000. This soundwall was determined not reasonable and therefore not recommended.

Soundwall S818 (State Route 99–Area 11). Soundwall S818 is on the shoulder of the Rosedale Highway northbound on-ramp by a motel between Rosedale Highway and Gilmore Avenue in State Route 99-Area 11 (Receiver R99-75; see Figure 3-43 in Volume 2). A measurement taken within this area indicates that the existing traffic noise level is 69 dBA. The future traffic noise level, without the project, is predicted to be 75 dBA. The future traffic noise level, with the project, is predicted to be 75 dBA. Since the predicted future traffic noise level exceeds 72 dBA, the noise abatement criterion for hotel uses, this receiver would be impacted by traffic noise levels. To achieve a 5-decibel reduction at Receiver R99-75, a 10-foot-high soundwall would be needed. Total cost allowance for this soundwall, calculated in accordance with the Caltrans Traffic Noise Analysis Protocol, is $55,000. The current estimated cost of the soundwall is $203,000. This soundwall was determined not reasonable and therefore not recommended.

Receivers R99-62 to R99-66 and R99-68. Traffic noise impacts would occur at outdoor use areas associated with seven single-family residences and one motel along the northbound side of State Route 99 between Verde and Palm Streets in State Route 99-Area 8 (see Figures 3-43 and 3-44 in Volume 2). The Econolodge and various commercial properties along the east side of Oak Street depend on vehicular access and visibility from that street. The only potential location for a soundwall would be along the proposed retaining wall west of Oak Street under Alternative C. Because of the unabated influence of noise from Oak Street traffic, even with the considered soundwall, the *Noise Study Report* concluded that a soundwall would not provide feasible traffic noise abatement.

State Route 58 East of State Route 99

Soundwall S90 (State Route 58–Area 2). Soundwall S90 on the shoulder edge and existing right-of-way line along the State Route 99/State Route 58 northbound-to-eastbound connector would provide feasible traffic noise abatement for 13 single-family residences in State Route 58-Area 2 (see Figure 3-45 in Volume 2; Receivers R58-11 through R58-18). Existing traffic noise levels in this area are 65 to 71 dBA. Future traffic noise levels, without the project, are predicted to be 67 to 73 dBA. Future traffic noise levels, with the project, are predicted to be 66 to 70 dBA. Since predicted future traffic noise levels meet or exceed 67 dBA, the noise

abatement criterion for residential uses, receivers in this area would be impacted by traffic noise levels. A 12- to 14-foot-high soundwall would be needed to achieve feasible and reasonable traffic noise abatement at Receivers R58-11 through R58-18. Total cost allowance for this soundwall, calculated in accordance with the Caltrans Traffic Noise Analysis Protocol, is $715,000. The current estimated cost of the soundwall is $639,000. The soundwall, therefore, is recommended.

Soundwalls Common to All Build Alternatives

Soundwall S661 (State Route 99–Area 4). In Alternatives A and B, Soundwall S661 is on the new right-of-way line and would provide feasible traffic noise abatement for two single-family residences between Belle Terrace and Ming Avenue in State Route 99-Area 4 (see Figure 3-36 in Volume 2; Receivers R99-23 and R99-25). In Alternative C, this soundwall is on the right-of-way line. Measurements taken indicate that the existing traffic noise levels in this area are between 62 and 66 dBA for Alternative A. The future traffic noise levels at these receivers without the project are predicted to be between 65 and 69 dBA for Alternative A. The future traffic noise levels at these receivers with the project are predicted to be between 72 and 74 dBA. Measurements taken indicate that existing traffic noise levels at this location are 62 to 66 dBA for Alternative B. Future traffic noise levels at these receivers, without the project, are predicted to be 65 to 69 dBA. Future traffic noise levels at these receivers, with the project, are predicted to be 72 to 75 dBA. Measurements taken in this area indicate that existing traffic noise levels are 62 to 66 dBA for Alternative C. Future traffic noise levels at these receivers, without the project, are predicted to be 65 to 69 dBA. Future traffic noise levels at these receivers, with the project, are predicted to be 72 to 73 dBA.

Since the predicted future traffic noise level exceeds 67 dBA, the noise abatement criterion for residential uses, the single-family residences represented by these receivers would be impacted by traffic noise levels. A 12-foot-high soundwall would provide a 5-decibel reduction in traffic noise levels, but the design goal of a 7-decibel reduction in traffic noise levels would not be achieved by this soundwall. Since Soundwall S661 does not meet the design goal at any of the receivers, the soundwall is determined not reasonable and is not recommended.

Soundwall S676 (State Route 99–Area 5). Soundwall S676 is on the right-of-way line along northbound Wible Road and under Alternatives A and C would provide feasible traffic noise abatement for 13 single-family residences between Belle Terrace and State Route 58 in State Route 99-Area 5 (Receivers R99-30 through R99-37). Under Alternative B, nine single-family residences benefit (Receivers R99-30 through R99-37). For Alternative A, the existing traffic noise levels in this area range from 57 to 70 dBA. The future noise levels at these locations without the project are predicted to range from 62 to 75 dBA. The future traffic noise level at these locations with the project is predicted to range from 62 to 75 dBA. For Alternative B, existing traffic noise levels in this area are 57 to 70 dBA. Future traffic noise levels at these locations, without the project, are predicted to be 62 to 75 dBA. Future traffic noise levels at these locations, with the project, are predicted to be 62 to 73 dBA. Since all the predicted future traffic noise levels except for Receiver R99-30 approach or

exceed 67 dBA, the noise abatement criterion for residential uses, these receivers would be impacted by traffic noise levels. For Alternative C, existing traffic noise levels are 57 to 70 dBA. Future traffic noise levels, without the project, are predicted to be 62 to 75 dBA. Future traffic noise levels, with the project, are predicted to be 65 to 75 dBA. Except for Receiver R99-30, all predicted future traffic noise levels approach or exceed 67 dBA, the noise abatement criterion for residential uses.

In Alternatives A and C, a 10-foot-high soundwall would be needed to achieve feasible and reasonable traffic noise abatement at Receivers R99-31 through R99-37. Predicted future traffic noise levels for all receivers in Alternative B, except for Receivers R99-30 and R99-34, approach or exceed 67 dBA, the noise abatement criterion for residential uses. Therefore, these receivers would be impacted by traffic noise levels. A 12- to 14-foot-high soundwall would be needed to achieve feasible and reasonable traffic noise abatement at Receivers R99-31 through R99-33 and R99-35 through R99-37.

The total cost allowance for this soundwall under Alternative A, calculated in accordance with the Caltrans Traffic Noise Analysis Protocol, is $715,000. The current estimated cost of the soundwall is $370,000. Under Alternative B, the total cost allowance for this soundwall is $495,000. The current estimated cost of the soundwall is $426,000. Under Alternative C, the total cost allowance for this soundwall is $715,000. The current estimated cost of the soundwall is $375,000.Therefore, this soundwall is recommended.

Soundwall S669 (State Route 99–Area 6). Soundwall S669 is on the right-of-way line of southbound State Route 99 between Belle Terrace and State Route 99 in State Route 99-Area 6 (see Figure 3-36 in Volume 2; Receivers R99-40 through R99-43A). Measurements taken within this area indicate that the existing traffic noise levels range from 57 to 60 dBA for Alternative A. The future noise levels at these locations without the project are predicted to range from 61 to 64 dBA. The future traffic noise level at these locations with the project is predicted to range from 67 to 72 dBA. For Alternative B, existing traffic noise levels are 57 to 59 dBA. Future traffic noise levels, without the project, are predicted to be 61 to 63 dBA. Future traffic noise levels, with the project, are predicted to be 70 to 75 dBA. For Alternative C, existing traffic noise levels are 57 to 60 dBA. Future traffic noise levels, without the project, are predicted to be 61 to 64 dBA. Future traffic noise levels, with the project, are predicted to be 67 to 77 dBA. Since the predicted future traffic noise levels exceed 67 dBA, the noise abatement criterion for residential uses, these receivers would be impacted by traffic noise levels. To achieve a 5-decibel reduction at Receivers R99-40 through R99-43A, which represent a daycare center and four single-family residences, a soundwall varying in height from 10 to 16 feet would be needed. The design goal of a 7-decibel reduction is achieved at Receiver R99-43 by Soundwall S669. The total cost allowance for this soundwall, calculated in accordance with the Caltrans Traffic Noise Analysis Protocol, is $275,000 for Alternative A. The current estimated cost of the soundwall is $441,000. For Alternative B, the total cost allowance for this soundwall is $275,000. The current estimated cost of the soundwall is $312,000. For Alternative C, the total cost allowance for this soundwall is

$165,000. The current estimated cost of the soundwall is $420,000. Therefore, this soundwall is not reasonable and therefore is not recommended.

Receiver R99-2. Traffic noise impacts would occur at an outdoor use area associated with one single-family residence along the northbound side of State Route 99 north of Wilson Road (State Route 99-Area 1; see Figure 3-36 in Volume 2). The soundwall analysis from the *Noise Study Report* found that a soundwall along the right-of-way line would not provide feasible traffic noise abatement because a prospective soundwall could not provide at least 5 dB of additional noise reduction beyond that already provided by the top of the cut along the northbound side of the freeway. The soundwall, therefore, is not feasible.

Receivers R99-4 through R99-8. Traffic noise impacts would occur at outdoor use areas associated with eight single-family residences, 14 multi-family units, and one shared recreation area within the same multi-family development along the southbound side of State Route 99 between Wilson Road and Ming Avenue (State Route 99-Area 2; see Figure 3-36 in Volume 2). The soundwall analysis from the *Noise Study Report* found that raising the height of the existing soundwall in this area would not provide an additional 5 dB or more of noise reduction at any of the impacted receivers; a heightened soundwall would not provide feasible traffic noise abatement because the existing soundwall already provides much of the noise reduction potential of a soundwall.

State Route 58 East of State Route 99

Soundwall S45 (State Route 58–Area 1). Soundwall S45 (also known as Soundwalls S103 and 109 in Alternative C) is on the right-of-way line along westbound State Route 58 and would provide feasible traffic noise abatement for 17 single-family residences and five multi-family residences in Alternatives A and B, and 14 single-family homes between Hughes Lane and State Route 99 in State Route 58-Area 1 (see Figures 3-36 and 3-37 in Volume 2; Receivers R58-1 through R58-10). The existing traffic noise levels for Alternatives A and B in this area range from 58 to 70 dBA. The future traffic noise level at these locations without the project is predicted to range from 61 to 73 dBA. The future traffic noise level at these locations with the project is predicted to range from 65 to 77 dBA. In Alternative C, existing traffic noise levels in this area are 58 to 68 dBA. Future traffic noise levels, without the project, are predicted to be 63 to 73 dBA. Future traffic noise levels, with the project, are predicted to be 68 to 76 dBA. Since all but one of the predicted future traffic noise levels approach or exceed 67 dBA, the noise abatement criterion for residential uses, these receivers, except Receiver R58-6, would be impacted by traffic noise levels.

A 12-foot-high soundwall would be needed to achieve feasible and reasonable traffic noise abatement in Alternative A at Receivers R58-1 through R58-10. Under Alternative B, a soundwall varying in height from 12 to 14 feet would be needed to achieve feasible and reasonable traffic noise abatement. Under Alternative C, Soundwall S109 with a height of 10 feet and Soundwall S013 with heights of 10 to 14 feet would be needed to achieve feasible and reasonable traffic noise abatement. The total cost allowance for this soundwall under Alternative A, calculated in

accordance with the Caltrans Traffic Noise Analysis Protocol, is $1,210,000. The current estimated cost is $978,000. In Alternative B, the total cost allowance for this soundwall is $1,210,000. The current estimated cost is $994,000. In Alternative C, the total cost allowance for this soundwall system is $770,000. The current estimated cost is $492,000. Therefore, this soundwall is recommended.

Soundwall S68 (State Route 58–Area 4). Soundwall S68 (also known as Soundwall S624 in Alternative C) is on the right-of-way line along eastbound State Route 58 and would provide feasible traffic noise abatement for 11 single-family residences and four multi-family residences between Hughes Lane and H Street in State Route 58-Area 4 (see Figure 3-37 in Volume 2; Receivers R58-34 through R58-42A). The existing traffic noise levels in this area under Alternatives A, B, and C range from 58 to 72 dBA. The future traffic noise level at these locations without the project is predicted to range from 58 to 72 dBA. The future traffic noise level at these locations with the project is predicted to range from 59 to 76 dBA. Receivers with predicted future traffic noise levels that approach or exceed 67 dBA, the noise abatement criterion for residential uses, would be impacted by traffic noise levels. An 8- to 10-foot-high soundwall would be needed to achieve feasible and reasonable traffic noise abatement at Receivers R58-34 through R58-42A. The total cost allowance for this soundwall for all alternatives, calculated in accordance with the Caltrans Traffic Noise Analysis Protocol, is $825,000. The current estimated cost of the soundwall is $739,000. Therefore, this soundwall is recommended.

Soundwall S71A (State Route 58–Area 3). Soundwall S71A under Alternatives A and B, (also known as Soundwall S629A in Alternative C) is on the right-of-way line along westbound State Route 58 and would provide feasible traffic noise abatement for two single-family residences between Hughes Lane and H Street in State Route 58-Area 3 (see Figure 3-37 in Volume 2; Receivers R58-25 through R58-33). The existing traffic noise levels in this area for Alternatives A, B, and C range from 57 to 71 dBA. The future traffic noise level at these locations without the project is predicted to range from 60 to 74 dBA. The future traffic noise level at these locations with the project is predicted to range from 63 to 76 dBA. Predicted future traffic noise levels at Receiver R58-33 approach or exceed 67 dBA, the noise abatement criterion for residential uses, so the receivers would be impacted by traffic noise levels. An 8-foot-high soundwall would be needed to achieve feasible and reasonable traffic noise abatement at Receiver R58-33. The total cost allowance for this soundwall, calculated in accordance with the Caltrans Traffic Noise Analysis Protocol, is $110,000. The current estimated cost of the soundwall is $54,000. Therefore, this soundwall is recommended.

Soundwall S93 (State Route 58–Area 5). Soundwall S93 (also known as Soundwall S649 in Alternative C) is on the right-of-way line along westbound State Route 58 and would provide feasible traffic noise abatement for seven single-family residences between Chester Avenue and Vernal Place in State Route 58-Area 5 (see Figure 3-37 in Volume 2; Receivers R58-45 through R58-48). The existing traffic noise levels under all the alternatives in this area range from 61 to 65 dBA. The future traffic noise level at these locations without the project is predicted to range from 60 to

64 dBA. The future traffic noise level at these locations with the project is predicted to range from 62 to 66 dBA. Predicted future traffic noise levels at Receivers R58-46 and R58-48 approach or exceed 67 dBA, which is the noise abatement criterion for residential uses, so the receivers would be impacted by traffic noise levels. A 16-foot-high soundwall would be needed to achieve feasible and reasonable traffic noise abatement at Receivers R58-46 and R58-48. The total cost allowance for this soundwall under Alternatives A and B, calculated in accordance with the Caltrans Traffic Noise Analysis Protocol, is $385,000. The current estimated cost of the soundwall is $345,000. In Alternative C, the total cost allowance is $385,000. The current estimated cost is $192,000. Therefore, this soundwall is recommended.

Soundwall S107 (State Route 58–Area 5). Soundwall S107 (also known as Soundwall S663 in Alternative C) is on top of a retaining wall at the edge of the shoulder along the westbound State Route 58 and westbound Chester Avenue off-ramp and would provide feasible traffic noise abatement for 18 single-family residences in Alternatives A and B and 20 single-family homes in Alternative C between Vernal Place and P Street in State Route 58-Area 5 (see Figure 3-37 in Volume 2; Receivers R58-49 through R58-59). The existing traffic noise levels in this area in Alternatives A and B range from 60 to 70 dBA. The future traffic noise level at these locations without the project is predicted to range from 63 to 72 dBA. The future traffic noise level at these locations with the project is predicted to range from 64 to 73 dBA. In Alternative C, existing traffic noise levels in this area are 60 to 70 dBA. Future traffic noise levels, without the project, are predicted to be 63 to 72 dBA. Future traffic noise levels, with the project, are predicted to be 65 to 74 dBA. Receivers where the predicted future traffic noise level approaches or exceeds 67 dBA, the noise abatement criterion for residential uses, would be impacted by traffic noise levels.

A soundwall varying in height from 10 to 12 feet would be needed to achieve feasible and reasonable traffic noise abatement at Receivers R58-49 through R58-59. Under Alternatives A and B, the total cost allowance for this soundwall, calculated in accordance with the Caltrans Traffic Noise Analysis Protocol, is $990,000. The current estimated cost is $421,000. In Alternative C, the total cost allowance for this soundwall is $1,100,000. The current estimated cost of the soundwall is $592,000. Therefore, this soundwall is recommended.

Soundwall S108 (State Route 58–Area 6). Soundwall S108 (also known as Soundwall S664 in Alternative C) is on top of a retaining wall at the edge of the shoulder along the eastbound State Route 58 and eastbound Chester Avenue on-ramp. This soundwall would provide feasible traffic noise abatement for 34 single-family residences and 24 multi-family residences between Chester Avenue and Union Avenue in State Route 58-Area 6 (see Figures 3-37 and 3-38 in Volume 2; Receivers R58-71 through R58-100). The existing traffic noise levels in this area under Alternative A range from 61 to 74 dBA. The future traffic noise level at these locations without the project is predicted to range from 63 to 74 dBA. The future traffic noise level at these locations with the project is predicted to range from 65 to 79 dBA. In Alternative B, existing traffic noise levels in this area are 61 to 74 dBA. Future traffic noise levels at these locations, without the project, are predicted to be

63 to 76 dBA. Future traffic noise levels at these locations, with the project, are predicted to be 65 to 79 dBA. In Alternative C, existing traffic noise levels in this area are 61 to 74 dBA. Future traffic noise levels, without the project, are predicted to be 63 to 76 dBA. Future traffic noise levels, with the project, are predicted to be 64 to 78 dBA. Except for Receiver R58-82 in Alternatives A and B, all of the predicted future traffic noise levels approach or exceed 67 dBA, the noise abatement criterion for residential uses for receivers in this area. In Alternative C, except for Receivers R58-82 and R58-86, predicted future traffic noise levels approach or exceed 67 dBA, the noise abatement criterion for residential uses, so the receivers would be impacted by traffic noise levels.

Under Alternatives A and B, a soundwall varying in height from 12 to 14 feet would be needed to achieve feasible and reasonable traffic noise abatement at Receivers R58-71 through R58-100. The total cost allowance for this soundwall, calculated in accordance with the Caltrans Traffic Noise Analysis Protocol, is $3,190,000. The current estimated cost of the soundwall is $1,036,000. In Alternative C, a soundwall varying in height from 10 to 14 feet would be needed to achieve feasible and reasonable traffic noise abatement at Receivers R58-71 through R58-100. Total cost allowance for this soundwall is $3,190,000. The current estimated cost is $1,000,000. Therefore, this soundwall is recommended.

Soundwall S119 (State Route 58–Area 5). Soundwall S119 (also known as Soundwall S667 in Alternative C), on the shoulder along westbound State Route 58, would provide feasible traffic noise abatement for 12 single-family residences between P Street and Union Avenue in State Route 58-Area 5 (see Figures 3-37 and 3-38 in Volume 2; Receivers R58-60 through R58-66). In Alternative A, the existing traffic noise levels in this area range from 63 to 72 dBA. The future traffic noise levels at these locations, without the project, are predicted to range from 65 to 72 dBA. Future traffic noise levels, with the project, are predicted to be 68 to 73 dBA. In Alternative B, existing traffic noise levels are 63 to 72 dBA. Future traffic noise levels at these locations, without the project, are predicted to be 66 to 72 dBA. Future traffic noise levels at these locations, with the project, are predicted to be 68 to 73 dBA. In Alternative C, existing traffic noise levels are 63 to 72 dBA. Future traffic noise levels, without the project, are predicted to be 66 to 72 dBA. Future traffic noise levels, with the project, are predicted to be 68 to 74 dBA. Since all the predicted future traffic noise levels exceed 67 dBA, the noise abatement criterion for residential uses, these receivers would be impacted by traffic noise levels.

A soundwall varying in height from 10 to 12 feet would be needed to achieve feasible and reasonable traffic noise abatement at Receivers R58-60 through R58-66. The total cost allowance in Alternatives A and B for this soundwall, calculated in accordance with the Caltrans Traffic Noise Analysis Protocol, is $660,000. The current estimated cost of the soundwall is $276,000. For Alternative C, the total cost allowance for this soundwall is $660,000. The current estimated cost of the soundwall is $340,000. Therefore, this soundwall is recommended.

Soundwall S144 (State Route 58–Area 8). Soundwall S144 (also known as Soundwall S702 in Alternative C) is on the right-of-way line along the eastbound State Route 58 Union Avenue on-ramp and would provide feasible traffic noise abatement for eight single-family residences between Bliss Street and Union Avenue in State Route 58-Area 8 (see Figure 3-38 in Volume 2; Receivers R58-128 through R58-139). In Alternative A, the existing traffic noise levels in this area range from 57 to 70 dBA. The future traffic noise levels at these locations, without the project, are predicted to range from 60 to 74 dBA. Future traffic noise levels at these locations, with the project, are predicted to range from 61 to 76 dBA. In Alternative B, existing traffic noise levels in this area are 57 to 70 dBA. Future traffic noise levels at these locations, without the project, are predicted to be 60 to 74 dBA. In Alternative C, existing traffic noise levels in this area are 58 to 70 dBA. Future traffic noise levels, without the project, are predicted to be 60 to 74 dBA. Future traffic noise levels, with the project, are predicted to be 61 to 75 dBA. Future traffic noise levels at these locations, with the project, are predicted to be 61 to 75 dBA. Receivers where the predicted future traffic noise levels approach or exceed 67 dBA, the noise abatement criterion for residential uses, would be impacted by traffic noise levels.

A soundwall varying in height from 10 to 12 feet would be needed to achieve feasible and reasonable traffic noise abatement at Receivers R58-128 through R58-139. The total cost allowance for this soundwall, calculated in accordance with the Caltrans Traffic Noise Analysis Protocol, is $440,000. The current estimated cost of the soundwall is $445,000; however, this soundwall is recommended because the estimated construction cost is only 1 percent higher than the total reasonable allowance, within the margin of error for the calculation.

Soundwalls S147 and S165 (State Route 58–Area 7). Soundwalls S147 and S165 (also known as Soundwalls 703 and 721 in Alternative C), working as a system, are on the right-of-way line on the Union Avenue off-ramp and the shoulder along westbound State Route 58. These soundwalls would provide feasible traffic noise abatement for 31 single-family residences, 10 multi-family residences, and 22 mobile homes between Liggett Street and Cottonwood Road in State Route 58-Area 7 (see Figure 3-38 in Volume 2; Receivers R58-101 through R58-127). In Alternatives A, B, and C, the existing traffic noise levels in this area range from 59 to 75 dBA. The future traffic noise levels at these locations, without the project, are predicted to range from 63 to 78 dBA. Future traffic noise levels at these locations, with the project, are predicted to range from 64 to 79 dBA. Except for Receivers R58-103 and R58-105, all predicted future traffic noise levels for the remaining receivers in this area exceed 67 dBA, the noise abatement criterion for residential uses, so the receivers would be impacted by traffic noise levels. A 10-foot-high soundwall (S147) and 12-foot-high soundwall (S165) would be needed to achieve feasible and reasonable traffic noise abatement for the effected receivers. The total cost allowance for this soundwall system for all alternatives, calculated in accordance with the Caltrans Traffic Noise Analysis Protocol, is $3,465,000. The current estimated cost of the soundwall is $1,540,500. Therefore, this soundwall system is recommended.

Soundwalls S164 and S184 (State Route 58–Area 8). Soundwalls S164 and S184 (also known as Soundwalls S722 and S742 in Alternative C), work as a system on the shoulder and right-of-way line, respectively, along eastbound State Route 58. These soundwalls would provide feasible traffic noise abatement for 67 single-family residences and four multi-family residences between Bliss Street and Cottonwood Road in State Route 58-Area 8 (see Figure 3-38 in Volume 2; Receivers R58-140 through R58-172). Under all alternatives, the existing traffic noise levels in this area range from 62 to 74 dBA. The future traffic noise levels at these locations, without the project, are predicted to range from 65 to 76 dBA. Future traffic noise levels at these locations, with the project, are predicted to range from 67 to 78 dBA. Since all the predicted future traffic noise levels exceed 67 dBA, the noise abatement criterion for residential uses, the receivers in this area would be impacted by traffic noise levels. In Alternatives A and B, a soundwall varying in height from 10 to 14 feet (S164) and a 12-foot-high soundwall (S184) would be needed to achieve feasible and reasonable traffic noise abatement at Receivers R58-144 through R58-172. In Alternative C, a soundwall varying in height from 12 to 14 feet (S722) and a 12-foot-high soundwall (S742) would be needed to achieve feasible and reasonable traffic noise abatement at Receivers R58-144 through R58-172. The total cost allowance for this soundwall system under all alternatives, calculated in accordance with the Caltrans Traffic Noise Analysis Protocol, is $3,905,000. The current estimated cost of the soundwall is $1,365,000. Therefore, this soundwall system is recommended.

Receivers R58-43 and R58-44. Traffic noise impacts would occur at the frequent outdoor use areas of one single-family residence and two multi-family residential units along westbound State Route 58 (State Route 58-Area 5; see Figure 3-37 in Volume 2). Because of local traffic contributions from the frontage road between South Chester Avenue and H Street, a soundwall placed in the right-of-way would not provide a 5-decibel or more traffic noise reduction at these residences. The soundwall, therefore, would not be feasible.

Receiver R58-69. Traffic noise impacts would occur at the frequent outdoor use areas of one single-family residence along eastbound State Route 58 (State Route 58-Area 6; see Figure 3-37 in Volume 2). Because of local traffic noise contributions from the frontage road between H Street and South Chester Avenue, a soundwall placed in the right-of way would not provide a 5-decibel or more of traffic noise reduction at this residence. The soundwall, therefore, would not be feasible.

Areas with Feasible but not Reasonable Abatement

Several soundwalls meet feasibility requirements, but were not reasonable, so they were not recommended as part of the project. Below is a list of these soundwalls and associated receivers:

- Soundwall S469 (Alternative A) – Located along the shoulder of westbound Centennial Corridor east of Truxtun Avenue. Receivers RA-1 through RA-4.

- Soundwall S610 (Alternative C) – Located on the right-of-way line along eastbound State Route 58 between Dixon Avenue and Hughes Lane. Receivers R58-21 through R58-24A.
- Soundwall S71 (Alternatives A, B) – Located on the right-of-way of westbound State Route 58 between Hughes Lane and H Street. Receiver R58-28.
- Soundwall S629 (Alternative C) – Located on the right-of-way of westbound State Route 58 between Hughes Lane and H Street. Receiver R58-28.
- Soundwall S656 (Alternatives A and B) – Located on the right-of-way of northbound State Route 99 between Belle Terrace and Ming Avenue. Receivers R99-11 through R99-13.
- Soundwall S661 (Alternatives A and B) – Located on the right-of-way of southbound State Route 99 between Belle Terrace and Ming Avenue. Receivers R99-23 and R99-25.
- Soundwall S669 (Alternatives A, B, and C) – Located on the right-of-way of southbound State Route 99 between Belle Terrace and State Route 99. Receivers R99-40 through R99-43A.
- Soundwall S815 (Alternative C) – Located on the shoulder along southbound State Route 99 and Rosedale Highway off-ramp. Receivers R99-73 and R99-74.
- Soundwall S818 (Alternative C) – Located on the shoulder of Rosedale Highway northbound on-ramp. Receiver R99-75.

Areas without Feasible or Reasonable Abatement

There were locations where it was not possible to provide feasible traffic noise abatement (a 5-decibel reduction). Most of these areas are located behind existing soundwalls. Below is a list of the receivers at these locations:

- Receivers RB-34 and RB-35 (Alternative B) – Four single-family residences along the northbound side of the Centennial Corridor just north of Stockdale Highway.
- Receiver R99-2 (Alternative A, B, and C) – One single-family residence along the northbound side of State Route 99 north of Wilson Road.
- Receivers R99-4 through R99-8 (Alternatives A, B, and C) – Eight single-family residences, 14 multi-family units, and one shared recreation area within the same multi-family development along the southbound side of State Route 99 between Wilson Road and Ming Avenue.
- Receivers R99-11 through R99-13 (Alternative C) – Two single-family residences and one motel along northbound State Route 99 between Ming Avenue and Belle Terrace.
- Receivers R99-17 through R99-19 (Alternatives A, B, and C) – Five single-family residences along southbound State Route 99 north of Ming Avenue.

- Receivers R99-62 to R99-66 and R99-68 (Alternative C) – Seven single-family residences and one motel along the northbound side of State Route 99 between Verde and Palm Streets.
- Receivers R58-43 and R58-44 (Alternatives A, B, and C) – One single-family residence and two multi-family residential units along westbound State Route 58 between South Chester Avenue and H Street.
- Receiver R58-69 (Alternatives A, B, and C) – One single-family residence along eastbound State Route 58 between H Street and South Chester Avenue.

Existing Soundwalls

Six existing soundwalls along State Route 99 are within the project limits:

- Soundwall SW1 (Receivers R99-4 through R99-10A) – Located on the right-of-way line of southbound State Route 99 and eastbound Ming Avenue on-ramp. Soundwall SW1 would remain as-is under all alternatives.
- Soundwall SW2 (Receivers R99-16 through R99-22) – Located on the shoulder of southbound State Route 99 between Wood Lane and Ming Avenue. Most of existing Soundwall SW2 would be demolished under all three alternatives because of widening along the southbound side of State Route 99. A portion of this soundwall would be rebuilt on top of a proposed retaining wall and would be considered a replacement in kind. However, the northern portion of the wall demolition would accommodate a substantial widening of the existing cut. As a result, houses now protected by the existing soundwall would be acquired. Therefore, an in-kind replacement soundwall cannot be considered for this area, so a new soundwall has been analyzed in this area. The portion of Soundwall SW2 that would be replaced in kind extends from Laverne Avenue (Alternative A) or north of Laverne Avenue (Alternatives B and C) to Wood Lane.
- Soundwall SW3 (Receivers R99-14 and R99-15) – Located along the west side of Wible Road south of Belle Terrace. Soundwall SW3 would be replaced in kind under Alternatives A and B because of widening along the northbound side of State Route 99. The existing soundwall would remain under Alternative C.
- Soundwall SW4 (Receivers RA-72 through RA-77) – Located within the southwest corner of the Centennial Corridor and State Route 99 interchange. Soundwall SW4 would be demolished under all alternatives because of the eastbound Centennial Corridor connector to southbound State Route 99.
- Soundwall SW5 (Receivers R99-26 through R99-29) – Located along the west side of Wible Road north of Belle Terrace. Soundwall SW5 would be replaced in kind under Alternatives A and B because of widening along the northbound side of State Route 99. The existing soundwall would remain under Alternative C.
- Soundwall SW6 (Receivers R99-58 through R99-60) – Located along the top of the retaining wall from the cul-de-sac at the south end of Oakdale Drive northward to just south of Verde Street. Soundwall SW6 would be replaced in kind under Alternative C because of encroachment by the eastbound Centennial

Corridor to the southbound State Route 99 connector and construction of a retaining wall. The existing soundwall would remain under Alternatives A and B.

3.2.8 Energy

Regulatory Setting

The National Environmental Policy Act (42 U.S. Code Part 4332) requires identification of all potentially significant impacts to the environment, including energy impacts. For the California Environmental Quality Act, Appendix F, Energy Conservation, in the California Environmental Quality Act Guidelines, states that environmental impact reports must include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful and unnecessary consumption of energy.

Affected Environment

Energy consumption associated with vehicular movement is almost entirely confined to the consumption of fossil fuel (gasoline and diesel). According to the California Energy Commission, California is the tenth largest worldwide energy consumer, and the state is ranked second in consumption in the United States. Of the overall energy consumed in the state, the transportation sector represents the largest portion at 46 percent, followed by the industrial sector at 31 percent, residential sector at 13 percent, and commercial sector at 10 percent. Petroleum (excluding natural gas) satisfies 54 percent of California's energy demand; natural gas, 33 percent; and electricity, 13 percent. Electric power and natural gas in California are generally consumed by stationary users, whereas gasoline and diesel consumption is generally accounted for by transportation-related energy use (U.S. Department of Transportation, 2008). Existing energy resources pertinent to this project and market conditions are described below.

Petroleum

Vehicles traversing the study area are primarily powered by gasoline and diesel fuel, with natural gas- and electric-powered vehicles representing a very small percentage of overall vehicular operations. Fuel is distributed across metropolitan Bakersfield by many methods, including pipelines, railroads, and trucks.

California's gasoline and diesel markets are characterized by increasing demands. As of 2012, California imports more than 60 percent of its crude oil. The state's dependence on this increasingly expensive energy resource continues to grow.

Energy consumption in California continues to be dominated by growth in passenger vehicles. According to the *Indicators of Climate Change in California*, published by the California Environmental Protection Agency, Office of Environmental Hazard Health Assessment (April 2009), California is the second largest consumer of transportation fuels in the world (behind the United States as a whole). More than 16 billion gallons of gasoline and 4 billion gallons of diesel fuel are consumed each year (California Environmental Protection Agency, 2009). California's rapid

population growth, with a projected population of more than 44 million by 2020, is expected to result in substantial increases in transportation fuel demand.

Environmental Consequences

This section addresses potential energy impacts during long-term operation of the Centennial Corridor project. Short-term energy impacts associated with construction of the project are addressed in Section 3.6, Construction Impacts.

Transportation energy consumption reflects the types and number of vehicles in use, the extent of their use (vehicle miles traveled), and their fuel economy (miles per gallon). Energy consumed in the operation of transportation systems is typically referred to as direct energy, which includes the fuel required for passenger vehicles (automobiles, vans, and light trucks), heavy trucks (three or more axles), and transit buses. Energy used to operate facilities such as gas stations and station amenities, maintenance shops, and yards is also a part of direct energy, but is a small percentage compared to the overall fuel consumption by automobiles.

Energy consumed in construction and maintenance is referred to as indirect energy. Indirect energy consumption includes three main components: (1) energy required to build the project; (2) energy required to manufacture vehicles that use the roads; and (3) energy required for maintenance/periodic rehabilitation of the infrastructure.

This analysis compares the energy consumption associated with the project in design year 2038 with the energy consumption for the No-Build Alternative in 2038. This comparison generally allows for an analysis of the relative impact of the project on energy consumption based on like assumptions about technology, fuels and vehicles.

Common to All Build Alternatives

The *Traffic Study Report for Centennial Corridor* analyzed life-cycle cost benefits of the build alternatives compared to the No-Build Alternative using a computer software product developed for the Federal Highway Administration, called Surface Transportation Efficiency Analysis Model (STEAM 2.0). Among other things, the analysis provided a quantitative measurement of energy usage (presented in British thermal units or Btu) and gallons of fuel used for each of the alternatives. Information for 2038 is shown in Table 3.42. Though some variation in the benefit between the alternatives is shown in Table 3.42, some fuel use reduction under each build alternative compared to the No-Build Alternative is also shown. These benefits come from motorists being able to shift routes to higher-speed facilities with less congestion and the benefit of increased network capacity. Fuel consumption decreases as a result of vehicles traveling at higher speeds.

Table 3.42 Centennial Corridor 2038 Energy Usage Data

Energy Use	No-Build Alternative	Alternative A	Alternative B	Alternative C
Annual vehicle miles traveled[a] (in millions miles)	9,951.4	9,994.3	10,004.0	10,006.8
Annual gallons of fuel used (in 1,000 gallons)[b]	490,911.3	488,715.5	489,141.6	488,885.5
Annual energy use (in million Btu)	62,185,713	61,907,562	61,961.538	61,929,097

BTU: British thermal units

[a] Projection of total combined vehicles annually through the project limits.
[b] Fuel consumption based on estimates of average fuel consumption for the Year 2007 obtained from the California Air Resources Board's Motor Vehicle Emission Inventory models
Source: *Traffic Study Report for the Centennial Corridor* (Volume I, Table 3-17) 2012.

No-Build Alternative

As shown in Table 3.42, the No-Build Alternative would result in fewer vehicle miles traveled, but due to stop-and-start conditions and frequent idling typically associated with driving on surface streets, it would increase long-term operational energy demand compared to the build alternatives. This is because motorists take the most direct and timely travel choice under both the no-build and build conditions. With the No-Build Alternative, the route is shorter. With the build alternatives, the route is more convenient, though typically a little bit longer, and faster. The end result is that, with the No-Build Alternative, the vehicle miles traveled are fewer, but the vehicle hours traveled and fuel usage are greater.

Avoidance, Minimization, and/or Mitigation Measures

No mitigation is required.

3.3 Biological Environment

3.3.1 Natural Communities

This section of the document discusses natural biological communities of concern. The focus of this section is not on individual plant or animal species. This section also includes information on wildlife corridors and habitat fragmentation. Wildlife corridors are areas of habitat used by wildlife for seasonal or daily migration. Habitat fragmentation involves the potential for dividing sensitive habitat and thereby lessening its biological value.

Habitat areas that have been designated as critical habitat under the Federal Endangered Species Act are discussed in the Threatened and Endangered Species Section 3.3.5. Wetlands and other waters are discussed in Section 3.3.2.

Affected Environment

Information in this section comes from the *Natural Environment Study* (March 2013) for the project.

The following vegetation types occur in the biological study area: non-native grassland, riparian woodland/Great Valley cottonwood riparian forest, waterways, detention basin, agriculture, disturbed/ruderal, and developed/ornamental (see Figures 3-48 through 3-50 in Volume 2 and Figure 3-51 below). A description of each of these vegetation types is included in the *Natural Environment Study*.

Riparian woodland/Great Valley cottonwood riparian forest is the only natural community of concern that occurs in Segment 1 of the biological study area. Other vegetation types that could be affected are not discussed in this section because they are not natural communities of special concern.

Riparian woodland/Great Valley cottonwood riparian forest occurs along the banks of the Kern River. This vegetation type consists of an overstory of willows (*Salix* spp.) with occasional Fremont cottonwood (*Populus fremontii* ssp. *fremontii*). It is generally limited in extent. This community has a high potential to support special-status plant and wildlife species.

The Kern River is a regional wildlife corridor in the biological study area. It provides for wildlife movement through the Metropolitan Bakersfield Habitat Conservation Plan area and connects areas of open space between the northeastern reserve, the southwestern reserve, and the Kern Water Bank Habitat Conservation Plan reserve. Canals in the biological study area (Cross Valley Canal, Carrier Canal, Friant-Kern Canal, and Gooselake Slough) are also used for wildlife movement, especially in the highly urbanized portions.

Environmental Consequences

Common to All Build Alternatives

Riparian Woodland/Great Valley Cottonwood Riparian Forest

In total, 39.92 acres of riparian woodland/Great Valley cottonwood riparian forest occur in the biological study area. Some of these areas are under the jurisdiction of the U.S. Army Corps of Engineers, California Department of Fish and Wildlife, and/or Regional Water Quality Control Board (see discussion of Wetlands and Other Waters, Section 3.3.2). The following analysis discusses impacts related to Segment 1.

The nature of the impacts for all three build alternatives is the same. What distinguishes the alternatives is the amount of impact, although the range of impacts is similar (ranging from 0.97 to 2.96 total acres of riparian woodland/Great Valley cottonwood riparian forest impact). These impact estimates are shown in Table 3.43. The riparian woodland/Great Valley cottonwood riparian forest that would be permanently and temporarily affected is shown in Figures 3-48 through 3-50 in Volume 2 and Figure 3-51 below.

Table 3.43 Acres of Vegetation Types and Other Areas that Would be Affected by the Project

Vegetation Types and Other Areas	Existing	Alternative A		Alternative B		Alternative C	
		Perm	Temp	Perm	Temp	Perm	Temp
Non-Native Grassland	405.41	19.19	46.91	5.82	45.17	4.73	40.44
Riparian Woodland/Great Valley Cottonwood Riparian Forest	39.92	0.35	3.19	0.00	1.06	0.00	1.42
Waterways	102.89	1.11	6.54	1.07	4.43	0.76	4.93
Detention Basin	47.32	0.64	0.08	0.84	0.04	0.00	0.75
Disturbed/Ruderal	151.84	3.09	13.42	3.49	14.05	4.69	13.91
Agriculture	143.81	0.06	0.80	0.06	0.80	0.06	0.80
Total	**891.19**	**24.44**	**70.94**	**11.28**	**65.55**	**10.24**	**62.25**

Note: All alternatives include the improvements at Stockdale Highway and State Route 43.
Perm=permanent; Temp=temporary
Source: *Natural Environment Study* 2013.

Wildlife Movement

The Kern River is a regional wildlife corridor that provides for wildlife movement through the Metropolitan Bakersfield Habitat Conservation Plan area. The project would bridge the Kern River and, therefore, maintain this regional wildlife movement corridor.

Canals are used for wildlife movement, especially in the urbanized portions of the biological study area. The Friant-Kern Canal would be bridged by the project, and wildlife movement would be maintained. However, the Cross Valley Canal and Carrier Canal would be converted from open channels to box culverts. This could disrupt wildlife movement when the canal is full of water. Animals may be forced to move out of the corridor and into developed areas to go around the box culvert.

Increased movement through developed areas could increase the number of animals killed on the roadways near these canals. Although animals are exposed to the traffic along existing roads, crossing a new road may increase the number of animals killed on the roadway. Urbanized areas contain limited wildlife habitat, and animals that are present are tolerant of the urban setting. Therefore, for most wildlife occurring in the biological study area, impacts on wildlife movement would be considered less than substantial. An option of providing a bridge over the Carrier Canal instead of converting to a box culvert is also under consideration. This would reduce potential limitations to the wildlife movement by providing greater openness, which would be more attractive to kit fox movement than a box culvert. Construction costs for the 190-foot-long bridge would be $10 million.

The intersection improvement at Stockdale Highway and State Route 43 would have limited effects on wildlife movement because it would not substantially change the nature of the roadway. Similarly, interim use of Stockdale Highway to connect with Interstate 5 would not alter wildlife movement because no changes to the existing facility are proposed.

No-Build Alternative

The No-Build Alternative would not change existing conditions, so there would be no impact on sensitive habitat or wildlife movement.

Avoidance, Minimization, and/or Mitigation Measures

The only sensitive natural community in the study area is riparian woodland/Great Valley cottonwood riparian forest, which is also considered Wetlands and Other Waters (discussed in Section 3.3.2). Applicable measures are included in that section. In addition, minimization measures have been included in Section 3.6, Construction Impacts, to reduce potential impacts on biological resources associated with construction. No additional measures are required for the portion of the project proposed for construction.

3.3.2 Wetlands and Other Waters

Regulatory Setting

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the Federal Water Pollution Control Act, more commonly referred to as the Clean Water Act (33 U.S. Code 1344), is the main law regulating wetlands and surface waters. One purpose of the Clean Water Act is to regulate the discharge of dredged or fill material into waters of the United States, including wetlands. Waters of the United States include navigable waters, interstate waters, territorial seas and other waters that may be used in interstate or foreign commerce. To classify wetlands for the purposes of the Clean Water Act, a three-parameter approach is used that includes the presence of: hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (soils formed during saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the Clean Water Act.

Section 404 of the Clean Water Act establishes a regulatory program that provides that discharge of dredged or fill material cannot be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation’s waters would be significantly degraded. The Section 404 permit program is run by the U.S. Army Corps of Engineers with oversight by the U.S. Environmental Protection Agency.

The U.S. Army Corps of Engineers issues two types of 404 permits: General and Standard permits. There are two types of General Permits: Regional permits and Nationwide permits. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effects. Nationwide permits are issued to authorize a variety of minor project activities with no more than minimal effects.

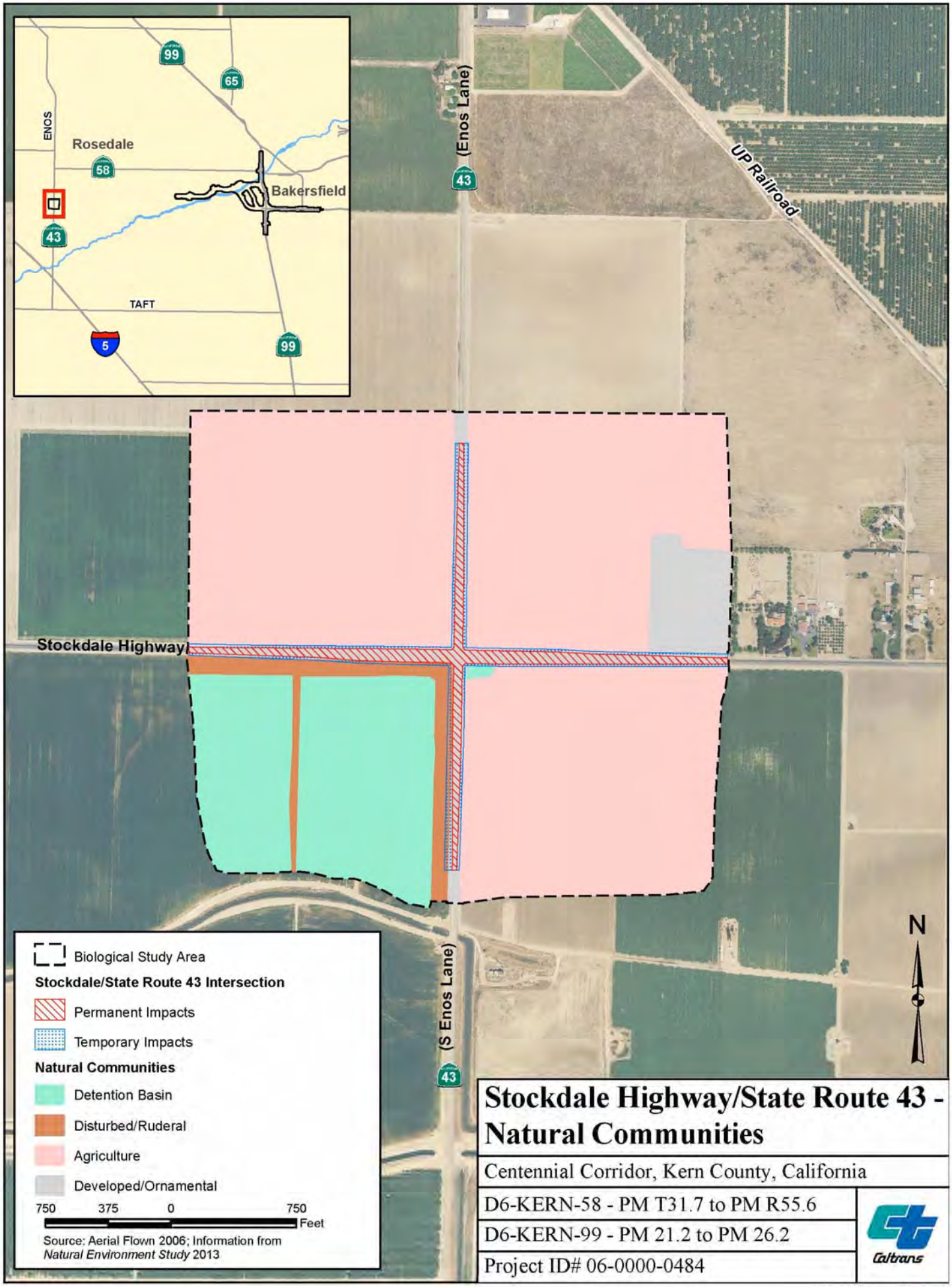

99
65
ENOS
Rosedale
58
Bakersfield
43
TAFT
5
99
(Enos Lane)
43
UP Railroad
Stockdale Highway
(S Enos Lane)
43
N
Biological Study Area
Stockdale/State Route 43 Intersection
Permanent Impacts
Temporary Impacts
Natural Communities
Detention Basin
Disturbed/Ruderal
Agriculture
Developed/Ornamental
750 375 0 750
Feet
Source: Aerial Flown 2006; Information from
Natural Environment Study 2013
Stockdale Highway/State Route 43 -
Natural Communities
Centennial Corridor, Kern County, California
D6-KERN-58 - PM T31.7 to PM R55.6
D6-KERN-99 - PM 21.2 to PM 26.2
Project ID# 06-0000-0484
Caltrans

Figure 3-51

There are two types of Standard permits: Individual permits and Letters of Permission. Ordinarily, projects that do not meet the criteria for a Nationwide Permit may be permitted under one of the U.S. Army Corps of Engineers' Standard permits. For Standard permits, the U.S. Army Corps of Engineers' decision to approve is based on compliance with U.S. Environmental Protection Agency's Section 404(b)(1) guidelines (U.S. Environmental Protection Agency 40 CFR Part 230), and whether permit approval is in the public interest. The Section 404(b)(1) guidelines were developed by the U.S. Environmental Protection Agency in conjunction with the U.S. Army Corps of Engineers and allow the discharge of dredged or fill material into the aquatic system (waters of the United States) only if there is no practicable alternative that would have less adverse effect. The guidelines state that the U.S. Army Corps of Engineers may not issue a permit if there is a least environmentally damaging practicable alternative to the proposed discharge that would have lesser effects on waters of the United States, and not have any other significant adverse environmental consequences.

The Executive Order for the Protection of Wetlands (11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, Executive Order 11890 states that a federal agency, such as the Federal Highway Administration and/or Caltrans, as assigned, cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds: (1) that there is no practicable alternative to the construction and (2) the proposed project includes all practicable measures to minimize harm.

At the state level, wetlands and waters are regulated primarily by the California Department of Fish and Wildlife, the State Water Resources Control Board and the Regional Water Quality Control Board. Sections 1600-1607 of the California Fish and Game Code require any agency that proposes a project that will substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify the California Department of Fish and Wildlife before beginning construction. If the California Department of Fish and Wildlife determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement will be required. California Department of Fish and Wildlife jurisdictional limits are usually defined by the tops of the stream or lake banks, or the outer edge of riparian vegetation, whichever is wider. Wetlands under jurisdiction of the U.S. Army Corps of Engineers may or may not be included in the area covered by a Streambed Alteration Agreement obtained from the California Department of Fish and Wildlife.

Regional Water Quality Control Boards were established under the Porter-Cologne Water Quality Control Act to oversee water quality. The Regional Water Quality Control Boards also issue water quality certifications for impacts to wetlands and waters in compliance with Section 401 of the Clean Water Act. See the Water Quality section for more details.

Affected Environment

Information in this section comes from the *Natural Environment Study* (March 2013), which includes a *Jurisdictional Delineation* (Appendix E of the *Natural Environment Study*, March 2013). A Jurisdictional Determination from the U.S. Army Corps of Engineers has not yet been requested.

The Kern River is in the biological study area. Areas within the river that consist of open sandy wash with no vegetation or very little vegetation were mapped as waterways. Riparian woodland/Great Valley cottonwood riparian forest occurs along the banks of the Kern River. The main value of the Kern River is its importance as a regional wildlife movement corridor.

Canals in the biological study area (Arvin-Edison Canal, Calloway Canal, Carrier Canal, Central Branch Kern Island Canal, Cross Valley Canal, Friant-Kern Canal, Kern Island Canal, Pioneer Canal, and Stine Canal) were mapped as waterways. The Arvin-Edison Canal and the Friant-Kern Canal are lined with concrete; the other canals are unlined with varying amounts of upland vegetation. The canals are within the jurisdiction of the U.S. Army Corps of Engineers, California Department of Fish and Wildlife, and Regional Water Quality Control Board and provide water conveyance and wildlife movement. Canals that are lined with concrete provide no live-in habitat value. Unlined canals either lack vegetation or are vegetated with non-native grasses, providing limited cover for use by wildlife.

A series of fenced, bermed fields generally located on or near established canals function as temporary water-holding areas or detention basins for several Kern County water storage districts. These basins are periodically maintained by mowing or disking. Several smaller basins constructed as flood control or water catchment basins associated with residential developments or other urban infrastructure were mapped as detention basins. Vegetation within these basins varies from a sparse cover of native species common in wetland habitats such as cattail (*Typha* spp.) and wild heliotrope (*Heliotropium curassavicum*) to dense stands of Russian thistle (*Salsola tragus*), a weedy species. At the time of the survey, some basins had standing water and some of them were dry. Detention basins are also within the jurisdiction of the California Department of Fish and Wildlife and provide for water recharge and wildlife habitat. The value of the detention basins varies depending on the type of habitat present (native or weedy) and the level of disturbance (frequency of mowing and disking). Some of the basins are known to be used for denning by kit fox (e.g., the debris basin south of Truxtun Avenue and north of the Carrier Canal) and have a very high habitat value.

The Kern River, various canals, and detention basins show evidence of hydrology sufficient to document that the ordinary high water mark meets the criteria for waters of the United States. In total, 141.68 acres of waters of the United States are present in Segment 1 of the biological study area and the intersection of Stockdale Highway and State Route 43. A portion of the Kern River and a small detention basin at Stockdale Highway and State Route 43 contained the three parameters (hydrophytic vegetation, hydric soils, and wetland hydrology) needed to be considered wetland-

waters of the United States. In total, 0.19 acre of wetland-waters of the United States lies within the biological study area (0.11 acre at the Kern River and 0.08 acre at Stockdale Highway and State Route 43). Figures 3-52a through 3-52c in Volume 2 show the locations of these jurisdictional resources.

The California Department of Fish and Wildlife's jurisdictional limits are defined by the top of the bank or the dripline of riparian vegetation. In total, 184.44 acres of California Department of Fish and Wildlife jurisdictional waters of the State are present in Segment 1 of the biological study area and at the intersection of Stockdale Highway and State Route 43. Figures 3-53a through 3-53c in Volume 2 show the locations of these jurisdictional resources.

Environmental Consequences

Common to All Build Alternatives

The following analysis discusses impacts related to Segment 1 and the improvements at the intersection of Stockdale Highway and State Route 43. No impacts related to the minor improvements in Segment 2 would occur because construction would occur within the existing right-of-way, which was previously disturbed for the construction of the Westside Parkway.

The impacts for all three build alternatives are similar. What distinguishes the alternatives is the amount of impact, although the range of impacts is similar (ranging from 0.74 to 1.20 acres of permanent impact on waters of the United States; 0.95 to 4.67 acres of permanent structural impact on waters of the State; and 3.27 to 9.69 acres of permanent shade impact on waters of the State). These impact estimates are shown in Tables 3.44 and 3.45. Impacts to jurisdictional areas were determined by comparing engineering plans with maps of jurisdictional resources.

Each of the build alternatives includes a bridge over the Kern River, including structures that would be placed in the river. The bridge structure would cause permanent impacts by casting a shadow that could prevent vegetation from growing under the bridge. This effect would not be considered substantial since the river is composed mostly of open sandy wash. The bridge structures would not interrupt its wildlife movement function. Temporary impacts would affect the area needed to build the bridge, including access to and within the construction area and areas for storage of construction equipment.

Each of the build alternatives would bridge the Friant-Kern Canal. However, the build alternatives would convert the Cross Valley Canal and Carrier Canal from open channels to box culverts.

Most of the detention basins would be avoided by the project; however, one basin southwest of State Route 58 and State Route 99 would be affected. Some detention basins are within the jurisdiction of the California Department of Fish and Wildlife, provide for water recharge and are considered jurisdictional resources. Therefore, they are discussed in the "Wetlands or other waters" section which describes impacts

to jurisdictional resources. Each of the build alternatives would also construct new basins.

The jurisdictional resources that would be permanently and temporarily affected by each alternative are quantified in Tables 3.44 and 3.45. The jurisdictional resources that would be affected by each alternative are shown in Figures 3-52a through 3-52c and 3-53a through 3-53c in Volume 2. Alternative A would affect about 7.23 acres of waters of the United States and 17.60 acres of waters of the State; Alternative B would affect about 5.54 acres of waters of the United States and 7.74 acres of waters of the State; and Alternative C would affect about 7.42 acres of waters of the United States and 10.26 acres of waters of the State. Intersection improvements at Stockdale Highway and State Route 43 would not affect waters of the United States or waters of the State.

The Water Quality Control Plan for the Tulare Lake Basin (Regional Water Quality Control Board 2004) lists the following beneficial uses for the portion of the Kern River below the Southern California Edison Kern River Powerhouse No. 1: municipal and domestic supply; agricultural supply; industrial service supply; industrial process supply; hydropower generation; water contact recreation; non-contact water recreation; warm freshwater habitat; wildlife habitat; rare, threatened, or endangered species habitat; and groundwater recharge. Although the project would affect warm freshwater habitat, wildlife habitat, and rare, threatened or endangered species habitat (kit fox), the project is not expected to substantially alter the functions and values listed above.

The project requires the following permits:

- U.S. Army Corps of Engineers Section 404 Permit
- Regional Water Quality Control Board Section 401 Water Quality Certification
- California Department of Fish and Game Section 1602 Streambed Alteration Agreement

No-Build Alternative

Since the No-Build Alternative does not propose any improvements, there would be no impacts to wetlands and other waters from this alternative.

Table 3.44 Build Alternatives' Impacts on Waters of the U.S. Under the Jurisdiction of the U.S. Army Corps of Engineers

Waters of the U.S.	Existing (Acres)	Permanent Structural Impact (Acres)[a]			Temporary Construction Impact (Acres)[b]			Total Impacts (Acres)		
		Alternative A	Alternative B	Alternative C	Alternative A	Alternative B	Alternative C	Alternative A	Alternative B	Alternative C
Kern River										
Wetlands	0.11	0.00	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.00
Other Waters	68.75	0.14	0.01	0.02	3.54	2.12	4.31	3.68	2.13	4.33
Arvin-Edison Canal										
Other Waters	0.92	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Calloway Canal										
Other Waters	2.31	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Carrier Canal										
Other Waters	6.79	0.36	0.45	0.39	0.05	0.01	0.15	0.41	0.46	0.54
Central Branch Kern Island Canal										
Other Waters	0.94	0.00	0.00	0.00	0.04	0.04	0.04	0.04	0.04	0.04
Cross Valley Canal										
Other Waters	11.22	0.30	0.22	0.20	1.52	0.82	0.65	1.82	1.04	0.85
Friant-Kern Canal										
Other Waters	3.06	0.00	0.07	0.00	0.41	0.26	0.33	0.41	0.33	0.33
Kern Island Canal										
Other Waters	1.05	0.00	0.00	0.00	0.02	0.02	0.02	0.02	0.02	0.02
Stine Canal										
Other Waters	3.25	0.40	0.24	0.13	0.44	1.26	0.21	0.84	1.50	0.34
Detention Basins										
Other Waters	4.41	0.00	0.01	0.00	0.00	0.00	0.97	0.00	0.01	0.97
Stockdale Highway and State Route 43										
Wetlands	0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other Waters	38.80	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	***141.68***	***1.20***	***1.00***	***0.74***	***6.03***	***4.54***	***6.68***	***7.23***	***5.54***	***7.42***

[a] Temporary impacts refer to construction access and staging areas; the temporary impact for the Kern River and Friant-Kern Canal includes the area under the bridge that will be accessed during construction.

[b] Permanent structural impacts are due to proposed structures.

Source: *Natural Environment Study* 2013.

Table 3.45 Build Alternatives' Impacts on Waters of the State Under the Jurisdiction of the California Department of Fish and Wildlife

Waters of the State	Existing (Acres)	Temporary Construction Impact (Acres)[a]			Permanent Structural Impact (Acres)[b]			Permanent Shade Impact (Acres)[c]			Total Impacts (Acres)		
		Alt. A	Alt. B	Alt. C	Alt. A	Alt. B	Alt. C	Alt. A	Alt. B	Alt. C	Alt. A	Alt. B	Alt. C
Kern River	96.05	9.27	3.01	5.64	3.33	0.01	0.03	9.27	3.01	5.64	12.60	3.02	5.67
Arvin-Edison Canal	1.16	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A	N/A	0.00	0.00	0.00
Calloway Canal	3.63	0.00	0.00	0.00	0.00	0.00	0.00	N/A	N/A	N/A	0.00	0.00	0.00
Carrier Canal	8.15	0.09	0.01	0.20	0.41	0.51	0.45	N/A	N/A	N/A	0.50	0.52	0.65
Central Branch Kern Island Canal	1.03	0.05	0.05	0.05	0.00	0.00	0.00	N/A	N/A	N/A	0.05	0.05	0.05
Cross Valley Canal	19.10	2.47	1.42	1.06	0.49	0.36	0.32	N/A	N/A	N/A	2.96	1.78	1.38
Friant-Kern Canal	3.26	0.42	0.26	0.33	0.00	0.07	0.00	0.42	0.26	0.33	0.42	0.33	0.33
Kern Island Canal	1.16	0.02	0.02	0.02	0.00	0.00	0.00	N/A	N/A	N/A	0.02	0.02	0.02
Stine Canal	3.96	0.56	1.52	0.25	0.44	0.29	0.15	N/A	N/A	N/A	1.00	1.81	0.40
Detention Basins	7.85	0.02	0.00	1.73	0.00	0.18	0.00	N/A	N/A	N/A	0.02	0.18	1.73
Stockdale Highway/State Route 43 Detention Basin	39.09	0.03	0.03	0.03	0.00	0.00	0.00	N/A	N/A	N/A	0.03	0.03	0.03
Total	**184.44**	**12.93**	**6.32**	**9.31**	**4.67**	**1.42**	**0.95**	**9.69**	**3.27**	**5.97**	**17.60**	**7.74**	**10.26**

[a] Temporary impacts refer to construction access and staging areas; the temporary impact for the Kern River and Friant-Kern Canal includes the area under the bridge that will be accessed during construction.

[b] Permanent structural impacts are due to proposed structures.

[c] Permanent shade impacts are included for the Kern River and Friant-Kern Canal; this impact is not applicable (N/A) to all other areas. This impact represents the area under the bridge shaded at noon and is equivalent to the temporary impacts. Therefore, the "Total Impacts" column is the sum of the Temporary Construction Impact and the Permanent Structural Impact columns.

Source: *Natural Environment Study* 2013.

Avoidance, Minimization, and/or Mitigation Measures

The project was designed to avoid and minimize effects on jurisdictional areas to the extent practicable. The number of columns in the river was minimized in order to minimize the area of jurisdictional resources that would be affected. Additionally, the Kern River bridge crossing was placed in the same location where the Westside Parkway bridge crosses the river so that the footprint of development along the river was minimized; thereby minimizing indirect effects (e.g., traffic noise, night lighting, and human activity) on animals using the river. In addition to the minimization measure listed below, other minimization measures would reduce impacts to wetlands and other waters during construction. The construction measures are discussed in Section 3.6, Construction Impacts.

Mitigation Measure

B-1 Prior to initiation of construction, Caltrans shall coordinate with and obtain necessary permits from the U.S. Army Corps of Engineers, California Department of Fish and Wildlife, and Regional Water Quality Control Board regarding compensation for impact to jurisdictional habitat. Due to the small effect of the alternatives on jurisdictional areas, replacement habitat shall be incorporated into the jurisdictional habitat replacement plan developed for the Westside Parkway project. The mitigation approach will be negotiated with the resource agencies and will consist of a combination of the following: 1) purchase of credits at a jurisdictional resources mitigation bank; 2) enhancement of jurisdictional resources; 3) restoration of jurisdictional resources; or 4) purchase of existing jurisdictional resources and placing a conservation easement over it.

3.3.3 Plant Species

Regulatory Setting

The U.S. Fish and Wildlife Service and California Department of Fish and Wildlife have regulatory responsibility for the protection of special-status plant species. Special-status species are selected for protection because they are rare and/or subject to population and habitat declines. “Special-status” is a general term for species that are afforded varying levels of regulatory protection. The highest level of protection is given to threatened and endangered species; these are species that are formally listed or proposed for listing as endangered or threatened under the Federal Endangered Species Act and/or the California Endangered Species Act. See the Threatened and Endangered Species section (Section 3.3.5) for information on these species.

This section of the document discusses all other special-status plant species, including California Department of Fish and Wildlife species of special concern, U.S. Fish and Wildlife Service candidate species, and California Native Plant Society rare and endangered plants.

Regulatory requirements for the Federal Endangered Species Act can be found at 16 U.S. Code, Section 1531, et seq. See also 50 CFR Part 402. The regulatory

requirements for the California Endangered Species Act can be found at California Fish and Game Code, Section 2050, et seq. Caltrans projects are also subject to the Native Plant Protection Act, found at Fish and Game Code, Section 1900-1913, and the California Environmental Quality Act, Public Resources Code, Sections 2100-21177.

Affected Environment

Twenty-five non-listed special-status plant species are known to occur in the project region and were evaluated in the *Natural Environment Study* (March 2013). A complete list of non-listed special-status plant species can be found in Appendix I in Volume 2 and in Table 2 of the *Natural Environment Study*.

Ferris' goldfields (*Lasthenia ferrisiae*) was seen in Segment 1 of the biological study area during surveys in 2009. Ferris' goldfields is a California Native Plant Society List 4.2 species (this is a "watch list" for plants that have limited distribution in California and are fairly endangered but have not currently been designated as federally or state threatened or endangered species). Two large populations totaling about 3,500 individuals were seen in a flood-control basin on oil refinery land just north of the Kern River. The remaining 24 non-listed special-status plant species are not expected to occur in Segment 1 of the biological study area because they were not seen during focused surveys. Figure 3-54 in Volume 2 shows the location of Ferris' goldfields in the biological study area.

Surveys in Segment 3 were limited to the intersection improvements at Stockdale Highway and State Route 43 because this is the only location where improvements are proposed.

Environmental Consequences

Common to All Build Alternatives

Improvements at Stockdale Highway and State Route 43 would not affect non-listed special-status plant species. The improvements in Segment 2 would not affect special-status plant species because all construction would be within the right-of-way and no habitat would be affected.

Alternative A

In Segment 1, Alternative A would affect both populations of Ferris' goldfields. This impact would be considered substantial based on the large number of individuals that would be affected.

Alternatives B and C

In Segment 1, Alternatives B and C would not affect the two populations of Ferris' goldfields.

No-Build Alternative

The No-Build Alternative would not result in any changes from existing conditions, so there would be no impact on plant species.

Avoidance, Minimization, and/or Mitigation Measures

Mitigation Measure

The following measure would apply to Alternative A in Segment 1:

B-2 If Alternative A is selected as the preferred alternative and the two populations of Ferris' goldfields cannot be avoided, Caltrans shall develop a mitigation and monitoring program to compensate for the loss of Ferris' goldfields before this species is affected. The mitigation program shall include preservation and/or enhancement of occupied habitat for this species or it shall include seed collection within the impact area and planting within a suitable mitigation site. The mitigation and monitoring plan shall be prepared by a qualified biologist and shall contain appropriate performance criteria.

3.3.4 Animal Species

Regulatory Setting

Many state and federal laws regulate impacts to wildlife. The U.S. Fish and Wildlife Service, the National Oceanic and Atmospheric Administration's National Marine Fisheries Service, and the California Department of Fish and Wildlife are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with animals not listed or proposed for listing under the state or federal Endangered Species Acts. Species listed or proposed for listing as threatened or endangered are discussed in Section 3.3.5. All other special-status animal species are discussed here, including California Department of Fish and Wildlife fully protected species and species of special concern, and U.S. Fish and Wildlife Service or National Oceanic and Atmospheric Administration Fisheries Service candidate species.

Federal laws and regulations pertaining to wildlife include the following:

- National Environmental Policy Act
- Migratory Bird Treaty Act
- Fish and Wildlife Coordination Act

State laws and regulations pertaining to wildlife include the following:

- California Environmental Quality Act
- Sections 1600–1603 of the Fish and Game Code
- Sections 4150 and 4152 of the Fish and Game Code

Affected Environment

Information in this section comes from the *Natural Environment Study* (March 2013). Twenty-one non-listed special-status wildlife species are known to occur in the project region and were evaluated in the *Natural Environment Study*.

Listed special-status wildlife species are discussed in Section 3.3.5. Many of these non-listed special-status wildlife species are associated with particular habitat types that are absent from the biological study area.

Habitat for 14 non-listed special-status wildlife species occurs in Segment 1 of the biological study area (see Appendix I in Volume 2 of this environmental document and Table 3 in the *Natural Environment Study*).

Habitat for non-listed special-status wildlife species was not evaluated for Segment 2 because there would be no impact on habitat related to improvements to the Westside Parkway.

Habitat for 12 non-listed special-status wildlife species occurs at the intersection of Stockdale Highway and State Route 43 (see Appendix I in Volume 2 of this environmental document and Table 3 in the *Natural Environment Study*).

The burrowing owl, a California Species of Special Concern, was not seen along the Kern River during focused surveys, but several burrows that could be used by owls were found. This species was seen during pre-construction surveys for the Westside Parkway north of the Kern River and west of Mohawk Street during the wintering season. An individual was seen on December 10 and 11, 2008, but it was gone during follow-up surveys and considered to be a transient owl. This species may occur throughout the biological study area for foraging and nesting. Figure 3-54 in Volume 2 shows where burrowing owls were seen in the biological study area, as well as potential burrow locations.

The Loggerhead shrike, a California Species of Special Concern, was seen in Segment 1 of the biological study area. This species is expected to occur throughout the biological study area for foraging and nesting.

Environmental Consequences

Common to All Build Alternatives

The following analysis discusses impacts for Segment 1 and the improvements at the intersection of Stockdale Highway and State Route 43. There would be no impacts for Segment 2 because the improvements are within the existing right-of-way or areas previous disturbed by construction of the Westside Parkway and no habitat would be removed.

The nature of the impacts (habitat removal) for all three build alternatives is the same. What distinguishes the alternatives is the amount of impact. Acreage impacts are shown in Table 3.45. Each of the build alternatives would affect habitat that could be used by special-status wildlife species. The project would contribute to the ongoing loss of habitat in the project region (the 10-mile radius surrounding the biological study area). The loss of habitat for non-listed special-status wildlife species would be limited relative to the availability of similar habitat in the region. Therefore, the effect would be considered adverse, but less than substantial. The amount of habitat loss

within Segment 1, as well as the intersection improvements at Stockdale Highway and State Route 43, for each special-status wildlife species is quantified in Table 3.46.

Table 3.46 Potential Habitat Affected for Non-listed Animal Species

Species	Suitable Habitat	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)
Western Spadefoot, Western Pond Turtle	Riparian Woodland/Great Valley Cottonwood Riparian Forest, Waterways, Detention Basin	11.91	7.44	7.86
Silvery Legless Lizard	Riparian Woodland/Great Valley Cottonwood Riparian Forest, Waterways, Detention Basin	11.91	7.44	7.86
Coast Horned Lizard	Non-Native Grassland	66.10	50.99	45.17
Golden Eagle, Northern Harrier, White-tailed Kite, American Peregrine Falcon, Burrowing Owl, Loggerhead Shrike, Western Mastiff Bat	Non-Native Grassland, Riparian Woodland/Great Valley Cottonwood Riparian Forest, Waterways, Detention Basin, Disturbed/Ruderal, Agriculture	95.38 (foraging habitat only)	76.83 (foraging habitat only)	72.49 (foraging habitat only)
Mountain Plover, Tricolored Blackbird, Yellow-headed Blackbird	Non-Native Grassland, Waterways, Detention Basin, Disturbed/Ruderal, Agriculture	91.84 (foraging habitat only)	75.77 (foraging habitat only)	71.07 (foraging habitat only)
Source: *Natural Environment Study* 2013.				

The project could directly affect nesting birds or raptors if vegetation were removed during the nesting season, and it could indirectly affect nesting raptors if work occurred next to large trees during the raptor nesting season. Although nesting birds and raptors have different nesting seasons, one nesting bird period that encompasses both periods was used rather than two separate time periods to avoid confusion during implementation. Therefore, the peak bird and raptor nesting season is February 1 to August 31.

Night lighting during construction or operation of the project could spill over into the adjacent open space, especially along the Kern River, and could have adverse effects on the foraging activities of nocturnal species (such as the burrowing owl, bats, and other small mammals) and may also increase predation on small mammals.

Avoidance, Minimization, and/or Mitigation Measures

No avoidance or minimization efforts are necessary for the golden eagle, northern harrier, American peregrine falcon, mountain plover, tricolored blackbird, and yellow-headed blackbird because the impacts would be considered less than substantial.

Measures to reduce impacts on other species during construction are discussed in Section 3.6, Construction Impacts.

3.3.5 Threatened and Endangered Species

Regulatory Setting

The main federal law protecting threatened and endangered species is the Federal Endangered Species Act: 16 U.S. Code, Section 1531, et seq. See also 50 CFR Part 402. This act and subsequent amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of this act, federal agencies, such as the Federal Highway Administration, are required to consult with the U.S. Fish and Wildlife Service and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service to ensure that they are not undertaking, funding, permitting or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species. The outcome of consultation under Section 7 may include a Biological Opinion with an Incidental Take statement, a Letter of Concurrence, and/or documentation of a no effect finding. Section 3 of the Federal Endangered Species Act defines take as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct."

California has enacted a similar law at the state level, the California Endangered Species Act, California Fish and Game Code, Section 2050, et seq. The California Endangered Species Act emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate planning to offset project-caused losses of listed species populations and their essential habitats. The California Department of Fish and Wildlife is the agency responsible for implementing the California Endangered Species Act. Section 2081 of the Fish and Game Code prohibits take of any species determined to be an endangered species or a threatened species. "Take" is defined in Section 86 of the Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." The California Endangered Species Act allows for take incidental to otherwise lawful development projects; for these actions, an incidental take permit is issued by the California Department of Fish and Wildlife. For species listed under both the Federal Endangered Species Act and the California Endangered Species Act requiring a Biological Opinion under Section 7 of the Federal Endangered Species Act, the California Department of Fish and Wildlife may also authorize impacts to California Endangered Species Act species by issuing a Consistency Determination under Section 2080.1 of the Fish and Game Code.

Affected Environment

Information in this section comes from the *Natural Environment Study* (March 2013), the Biological Assessment (March 2013), and the Biological Opinion (December 2013). A species list was obtained from the U.S. Fish and Wildlife Service on September 18, 2013 (see Appendix I, Volume 2).

Twenty-four threatened or endangered plant and wildlife species are known to occur in the project region and were evaluated in the *Natural Environment Study*. Many of these listed species are associated with particular habitat types that are absent from the biological study area.

Plant Species

No threatened or endangered plants were found during focused surveys in Segment 1 of the biological study area. Focused surveys were done at the intersection of Stockdale Highway and State Route 43 in spring/summer 2012. No special-status plant species were seen, but the results of surveys were inconclusive for two species due to lack of adequate rainfall in the winter of 2011 to 2012 and winter 2012 to 2013. Surveys for these species—California jewelflower (*Caulanthus californicus*) and San Joaquin woollythreads (*Monolopia congdonii* [*Lembertia c.*])—would be repeated before construction to confirm their absence.

No critical habitat for threatened or endangered plant or wildlife species is present in the biological study area.

Wildlife Species

No suitable habitat for the blunt-nosed leopard lizard (*Gambelia sila*, federally endangered, state endangered, fully protected) is present along Segment 1 of the biological study area or at the intersection of Stockdale Highway and State Route 43.

The Swainson's hawk (*Buteo swainsoni*, state threatened) was not seen during focused surveys of Segment 1 of the biological study area in 2009. Suitable foraging habitat for this species is found throughout the biological study area. This species was not seen nesting, but it has limited potential to nest along the Kern River. No suitable nesting habitat occurs in Segment 3 at the intersection of Stockdale Highway and State Route 43 in the biological study area.

The San Joaquin kit fox (*Vulpes macrotis mutica*, federally endangered, state threatened) is known to occur throughout the biological study area. Focused surveys for this species were done in Segment 1 of the biological study area. One sighting was made, and multiple dens were found, including one with fresh tracks and scat. Figure 3-54 shows the location of potential den locations in the biological study area.

Several dens of the San Joaquin kit fox were seen along the Kern River near Mohawk Street and adjacent grasslands, in City Basin 143 during focused surveys of the biological study area in 2008, and during pre-construction surveys for the Westside Parkway in 2009. In addition, kit foxes were documented south of Truxtun Avenue, in the landscaped Kern River Parkway, along the Carrier Canal and BNSF Railway

corridor, and in the City maintenance facility and basins (City of Bakersfield and Caltrans 2009). No potential dens were found at Stockdale Highway and State Route 43.

Areas of kit fox activity or movement were reported at the Calloway Canal, Friant-Kern Canal, northwest of State Route 43 and Interstate 5, near Coffee Road, near State Route 99 and State Route 58 (Rosedale Highway), and near Interstate 5 and Rosedale Highway. San Joaquin kit foxes are also known near the biological study area at the Sundale Country Club, Quailwood Park, Seven Oaks Country Club, and the California State University, Bakersfield campus (City of Bakersfield and Caltrans 2009). This species is expected to occur throughout the biological study area.

No suitable habitat for the Tipton kangaroo rat (*Dipodomys nitratoides nitratoides*, federally endangered, state endangered) is present in Segment 1 of the biological study area. No suitable habitat is present for this species at the intersection of Stockdale Highway and State Route 43.

No suitable habitat for the giant kangaroo rat (*Dipodomys ingens*, federally endangered, state endangered) or Nelson's (San Joaquin) antelope squirrel (*Ammospermophilus nelsoni*, state threatened) is present in Segment 1 of the biological study area. No suitable habitat is present for these species at the intersection of Stockdale Highway and State Route 43.

No critical habitat for threatened or endangered wildlife species is present in the biological study area.

Environmental Consequences

Common to All Build Alternatives

Plant Species

No threatened or endangered plant species occur in Segments 1 and 2; therefore, there would be no effect.

The Stockdale Highway/State Route 43 portion of the project was added to the project limits after project focused surveys were conducted. Focused surveys for this additional area have been attempted the last two springs (2012 and 2013); however, rainfall was not adequate to conduct the surveys that would conclusively determine absence or presence of these species. Assuming adequate rainfall is received in winter 2013-2014 (as verified by blooming plants at the reference populations), the surveys could be conducted in approximately April/May of 2014. Habitat conditions are marginally suitable for 1.07 acres and it is expected that these species are likely absent from this area. Therefore, a no effect determination for these species has been made for Segment 3.

Wildlife Species

Suitable habitat for the following species is not present in the biological study area: blunt-nosed leopard lizard, Tipton kangaroo rat, giant kangaroo rat, and Nelson's (San Joaquin) antelope squirrel. Therefore, there would be no effect.

The nature of the impacts for all three build alternatives is the same. What distinguishes the alternatives is the amount of acres or number of dens affected (see Table 3.47).

Table 3.47 Potential Habitat Affected for Listed Animal Species

Species	Suitable Habitat	Alternative A (acres)	Alternative B (acres)	Alternative C (acres)
Swainson's Hawk	Non-Native Grassland, Riparian Woodland/Great Valley Cottonwood Riparian Forest, Waterways, Detention Basin, Disturbed/Ruderal, Agriculture	95.38 (foraging habitat only)	76.83 (foraging habitat only)	72.49 (foraging habitat only)
San Joaquin Kit Fox	Non-Native Grassland, Riparian Woodland/Great Valley Cottonwood Riparian Forest, Waterways, Detention Basin, Disturbed/Ruderal, Agriculture	95.38 1 active den	76.83 3 potential dens	72.49 1 potential den

Note: Alternatives include the improvements at Stockdale Highway and State Route 43, which have been included in the total acreage.
Source: *Natural Environment Study* 2013.

Swainson's hawk: No Swainson's hawks were seen during the 2009 survey, but this species could forage in undeveloped vegetation types in the biological study area. The project would contribute to the ongoing loss of raptor foraging habitat in the project region (the 10-mile radius surrounding the biological study area). The loss of foraging habitat for this species would be limited relative to the availability of similar habitat in the region. This impact would be considered adverse, but less than substantial.

The Swainson's hawk could nest in trees in the biological study area, most likely along the Kern River. Tree removal and/or nearby construction could adversely affect nesting efforts for this species. Construction during the breeding season could disturb nesting activities, possibly resulting in nest abandonment, loss of young, and reduced health and vigor of eggs and/or nestings. Direct effects on an active Swainson's hawk nest would be considered a violation of the California Endangered Species Act, the California Fish and Game Code (Sections 3503, 3503.5, and 3513), and the Migratory

Bird Treaty Act. Any impact on an active nest (direct or indirect) during the Swainson's hawk breeding season (March 1-July 15) would be considered substantial.

San Joaquin kit fox: This species could forage and den in undeveloped vegetation in the biological study area. Loss of habitat could also reduce prey availability. The project would contribute to the ongoing loss of foraging/denning habitat in the project region (the 10-mile radius surrounding the biological study area).

The project would affect existing detention basins used by the kit fox, but the detention basins would be replaced as part of the project, and new detention basins would be added. Alternative A includes 7 basins. Alternative B would include 8 basins. Alternative C would include 11 basins. The addition of basins in kit fox activity areas may be considered a beneficial impact of the project if they are located in areas that were previously developed.

Night lighting would be used during construction and also during operation of the finished roadway. Spillover of light into the adjacent open space could have an adverse impact on foraging activities by the kit fox, which is a nocturnal species. This may result in reduced health and vigor of kit foxes and/or their young.

Vehicle strikes are considered an indirect effect as a result of the project. Currently, the San Joaquin kit fox is exposed to traffic along existing roadways. Crossing a new larger roadway may result in an unintentional increase in vehicle-related death. Several kit fox road kills have been reported within the biological study area.

Kit foxes in Bakersfield have been found to move along linear habitat features (canals, railway rights-of-way, the Kern River corridor, roads), going from one area of open space to another. Some existing movement corridors along existing linear habitat features, such as the Kern River and Friant-Kern Canal would be maintained. Other canals would be converted from open channels to box culverts under the roadway; the project would extend existing box culverts in some of these locations. In areas of kit fox activity (such as the Carrier Canal and Cross Valley Canal), this extension of the box culvert could disrupt kit fox movement when the canal is full of water. With a longer culvert to follow, kit foxes may choose to move out of the corridor and into developed areas to go around the box culvert, where they could be struck by cars and killed.

Therefore, this project may affect and is likely to adversely affect this species.

No-Build Alternative

There would be no change from existing conditions with the No-Build Alternative. Therefore, there would be no impacts to threatened and endangered species.

Avoidance, Minimization, and/or Mitigation Measures

Kit foxes in Bakersfield have been found to move along linear habitat features (canals, railway rights-of-way, the Kern River corridor, roads), going from one area

of open space to another. Maintaining existing movement corridors along existing linear habitat features, such as the Kern River and Friant-Kern Canal, would be a minimization measure.

Measures to reduce potential impacts to the Swainson's hawk and San Joaquin kit fox during construction are discussed in Section 3.6, Construction Impacts. The following mitigation measures would apply to all alternatives.

Mitigation Measures

B-3 Special Status Plant Species: Prior to project groundbreaking, a U.S. Fish and Wildlife-approved biologist(s) shall conduct updated protocol-level botanical surveys within the project footprint during the appropriate blooming periods for the following four species: the California jewelflower, the Kern mallow, the San Joaquin woollythreads, and the Bakersfield cactus. Surveys shall be conducted in accordance with the most current protocols accepted by the U.S. Fish and Wildlife Service.

To the greatest extent practicable, efforts shall be made to avoid the species during project design. If one of these species is observed within the impact area at Stockdale Highway and State Route 43 and it cannot be avoided, Caltrans shall obtain a take authorization from the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife before impacts to this species. Caltrans shall consult with the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife to determine the appropriate conservation measures to mitigate for impacts on this species. The mitigation shall include payment to an in-lieu fee program; preservation or enhancement of occupied habitat for the species; or collection of seed within the impact area and planting within a mitigation site with the appropriate microhabitat for this species. A detailed mitigation and monitoring program shall be prepared by a qualified biologist and approved by the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife.

B-4 S*an Joaquin kit fox:* Measures have been developed from standard recommendations described in the *USFWS Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance* (USFWS 2011b). In addition, project design changes have been identified to reduce impacts on the kit fox and have been incorporated into the design plans for the project. The main objective of project design changes is to maintain opportunities for kit foxes to cross over the road surface while reducing the potential for unintentional vehicle strikes. Construction of the new roadway would also incorporate several features to allow continued kit fox movement, including maintaining existing movement corridors along existing linear habitat features. These features include:

- Permeable fencing shall be installed along the proposed right-of-way in all areas where there is known San Joaquin kit fox activity and lower traffic speeds/volumes. Permanent exclusionary fencing shall be installed along the proposed right-of-way in high-density residential areas and/or in areas with higher traffic speeds/volumes. In areas in need of new permeable fencing, at least one design option featured below shall be adopted to provide the San Joaquin kit fox with passage and movement opportunities, and to minimize the potential to disrupt species movement and habitat fragmentation of the project area:
  (1) elevate the bottom of the fence 5 inches above ground to allow unobstructed movement by San Joaquin kit fox under the fence;
  (2) install ground-level 8-inch-wide by 8-inch-wide gaps no more than 100 feet apart along the length of the fence to allow for San Joaquin kit fox movement at regular intervals along the right-of-way; and
  (3) install fencing with a minimum mesh size of 3½ by 7 inches, preferably 5 by 12 inches, to allow unlimited movement through the fence.

- Curbed medians shall be used as part of the project design and their height shall be no greater than ten inches. Either 6-inch-high curbed medians with low vegetation (that is, less than 6 inches) or 10-inch-high unvegetated curbed medians shall be constructed so as not to obstruct the visual field of the San Joaquin kit fox near the roadway. Curbed medians less than 10 inches in height and which require landscaping shall be planted with low-level vegetation (i.e., less than 6 inches tall at maturity), or be mowed frequently to prevent overgrowth and provide an unobstructed line of sight for the species, or shall have gaps installed measuring no less than 4-feet-wide every 12 feet in areas landscaped with trees and shrubs. If required, landscaping shall be designed in conjunction with the curbed median design in order to allow unobstructed visibility to the San Joaquin kit fox and to maintain and/or enhance opportunities for movement across the roadway. Median barriers will be required in some areas of the project for the purpose of public safety. The Caltrans-designed modified median barrier type 60/S shall be used. Caltrans type 60/S design previously has been utilized in other projects (e.g., reinitiated Biological Opinion for the State Route 99 Goshen to Kingsburg 6-Lane Project, in Tulare and Fresno Counties; Service File number 81420-2009-F-0752) and includes 9-inch radius openings (semi-circular openings 9 inches high by 18 inches) spaced every 150 feet to allow passage by the San Joaquin kit fox. Maintaining permeability in this manner shall also reduce the potential to disrupt species movement and connectivity in the project area.

- In areas of known San Joaquin kit fox activity and high traffic volumes and/or speeds, existing San Joaquin kit fox movement corridors like the canal channels and the Kern River, as well as railroad right-of-

ways (e.g., BNSF), shall be preserved through the use of bridges and/or culverts to facilitate crossings. Some segments of the canals under the new roadways shall be converted from trapezoidal channels to box culverts; other segments of the canals with existing box culverts shall be extended. Toe-of-road fill and bridge support walls shall be maintained and new walls will be designed no less than 20 feet from the centerlines of canal access roads and railroad.

- An elevated bridge currently exists at the location where the Westside Parkway crosses the trapezoidal channel of the Friant-Kern Canal. Species access will continue to be provided along an elevated access road located parallel to the canal.
- An above-grade bridge will be constructed over the trapezoidal channel of the Stine Canal. This will allow the species to move freely below the roadway.
- An above-grade bridge (westbound Mohawk St. off-ramp) will be constructed over the Cross Valley Canal, which exists as a double box culvert. The Kern River corridor is located proximate to the canal and so it provides existing access for the species in the area; no additional crossing features are proposed at this canal site.

- Two design options are proposed for the location where the new roadway will cross the Carrier Canal: (1) box culvert – if this design is chosen, a crossing structure (with proposed 5 x 5 inch mesh size and 10 inch diameter escape pipes within a 60 inch diameter crossing culvert) will be installed to connect the access roads on the north side of the canal; (2) bridge – if this design is chosen, no additional crossing features will be necessary since the elevated bridge above the trapezoidal canal will allow the species to move freely below the roadway.
- Caltrans shall verify that the City compensates for the permanent loss of 11.28 acres and temporary disturbance to 65.55 acres of habitat consisting of non-native grassland, riparian woodland/Great Valley cottonwood riparian forest, ruderal/disturbed areas, desiccated waterways, detention basins, and agricultural land suitable for the San Joaquin kit fox by purchasing 105.95 acres (using a 3:1 compensation ratio for permanent effects and 1.1:1 compensation ratio for temporary effects) through the Metropolitan Bakersfield Habitat Conservation Plan. Prior to construction, the limits of affected habitat acreage by vegetation type shall be verified and delineated on a map, and submitted for approval to the U.S. Fish and Wildlife Service. This shall be done prior to its submittal to the City Planning Department for fee payment.

Project design changes, when implemented together, are expected to reduce the potential for adverse effects on the kit fox. Project design shall

be re-evaluated and adjusted as appropriate during the final project design phase and if changes are made plans shall be submitted for review and approval to the U.S. Fish and Wildlife Service.

The actions to be applied during construction are identified in Section 3.6, Construction Impacts, as part of Mitigation Measure CI-25. Mitigation CUM-1, provided in the Cumulative Impacts discussion, also addresses the San Joaquin kit fox.

3.3.6 Invasive Species

Regulatory Setting

On February 3, 1999, President Bill Clinton signed Executive Order 13112 requiring federal agencies to combat the introduction or spread of invasive species in the United States. The order defines invasive species as "any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health." Federal Highway Administration guidance issued August 10, 1999 directs the use of the State's invasive species list, currently maintained by the California Invasive Species Council to define the invasive plants that must be considered as part of the National Environmental Policy Act analysis for a project.

Affected Environment

Information in this section came from the *Natural Environment Study* (March 2013) for the project.

Although non-native species (non-native grasses and ornamental species) occur throughout the biological study area, invasive species are not prevalent within the biological study area. One listed noxious weed species from the California Department of Food and Agriculture Noxious Weed List (2010) and five listed invasive weed species from the California Invasive Plant Council List (2006) were identified in the biological study area: wild turnip (*Brassica toumefortii*), foxtail chess (*Bromus madritensis* ssp. *rubens*), cheat grass (*Bromus tectorum*), halogeton (*Halogeton glomeratus*), English ivy (*Hedera helix*), and Mediterranean tamarisk (*Tamrix ramosissima*). No species on the Federal Weed List (U.S. Department of Agriculture Natural Resource Conservation Service 2010) were identified within the biological study area.

Environmental Consequences

Build Alternatives

Common to All Build Alternatives

Invasive species can be introduced into an area through the type of landscaping plants used or from remnants of plant materials (seeds or portions of plants) on construction equipment. As a standard practice, Caltrans has a biologist review the list of plants that are proposed for erosion control and landscaping to ensure the list does not

include any species on the California list of invasive species. Additionally, all equipment and materials are inspected for the presence of invasive species.

No-Build Alternative

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

Avoidance, Minimization, and/or Mitigation Measures

The standard condition to minimize invasive species during construction is identified in Section 3.6, Construction Impacts.

3.4 Relationship Between Local Short-Term Uses of the Human Environment and the Maintenance and Enhancement of Long-Term Productivity

Common to All Build Alternatives

The project would provide freeway/roadway improvements that have been identified in state and city planning that considered the need for present and future traffic requirements with the context of present and future land use developments in the metropolitan Bakersfield area, the region, and the state. Local short-term impacts and the use of resources to build the project would support the long-term productivity of the metropolitan Bakersfield area.

The build alternatives would have similar impacts and are discussed separately only if an impact would not apply to all three build alternatives. The following local short-term impacts are expected from the project:

- ***Displacement of Households and Businesses.*** Relocation of these uses would be required, resulting in disruption of residents, neighborhoods and businesses. This would result in changes to community character and potential impacts to neighborhood cohesion.
- ***Construction Traffic Impacts.*** Construction impacts related to travel lane closures and traffic detours would result in temporary inconveniences and lost productivity due to delays.
- ***Construction Air Quality and Noise Impacts.*** Areas next to construction activities would be exposed to construction emissions and increased noise levels.
- ***Temporary Natural Habitat Displacement.*** Construction activities would displace natural habitat that is used by both common and sensitive species; long-term adverse effects are not expected.
- ***Increased Energy Usage During Construction.*** Energy use would be higher than normal from the use of construction equipment and manufacture/fabrication of construction materials.
- ***Parkland Impacts.*** Permanent displacement of 6.28 acres of the Kern River Parkway would occur with Alternative A associated with construction of the

bridge viaduct structures. Alternative C would result in the permanent displacement of 1.95 acres of the developed portion and 1.32 acres of the undeveloped portion of Saunders Park. Replacement parkland and facilities would be provided at Saunders Park.

- ***Visual and Aesthetic Impacts.*** Construction activities could generate visual and aesthetic images that are generally visually disruptive and may be undesirable to some affected individuals or groups. Demolition of acquired properties before the roadway is built could result in vacant lots interspersed in business areas and neighborhoods. However, long-term effects from construction activities and vacant parcels are not expected.

Compliance with standard conditions and implementation of minimization and mitigation measures would help to reduce these impacts. These measures, which are identified in each section and summarized in Appendix F, Volume 2, include the phased acquisition of property, development of a Traffic Management Plan, and compliance with regulations designed to reduce construction-related impacts. Though the impacts would be considered short term when compared to the long-term productivity of the project, the duration of construction (about 30 months) may be viewed as a prolonged inconvenience to the residents and businesses in the immediate area of construction.

Short-term benefits would also result from the project. This would include an increase in jobs and revenue in the local economy from the construction activities.

The following long-term impacts are expected from the project:

- ***Displacement of Households and Businesses***. All of the build alternatives would result in the displacement of homes and businesses. In addition, Alternatives A and B would result in substantial long-term disruption to the established Westpark neighborhood; Alternative C would not have this effect.
- ***Long-Term Loss of Habitat for Sensitive Species.*** The project would remove habitat used by the San Joaquin kit fox and burrowing owl.
- ***Change in Visual Character.*** The project would introduce a major transportation corridor, including elevated structures and retaining walls, in areas that currently do not have this element. This would be more pronounced with Alternatives A and B.
- ***Potential Impact to Archaeological and Paleontological Resources.*** Construction activities could destroy buried resources.
- ***Increased Noise.*** Before abatement, noise levels next to the roadway would be louder than what now exists in these locations due to the increased traffic volumes.

The project would provide long-term benefits both in and beyond the metropolitan Bakersfield area. The following long-term benefits are expected from the project:

- ***Improved Traffic Circulation.*** The project would reduce congestion and decrease travel times through the urbanized areas of Bakersfield. The project would provide an additional east-west connection that crosses the Kern River, allowing for better distribution of traffic on the roadway network. This would benefit the community and support the circulation demands of future development in the project area. Traffic volumes on the shared portion of State Route 58 and State Route 99 would be less than what would occur under the No-Build Alternative.
- ***Reduce Truck Trips on Local Roadways.*** With a high-speed freeway, the Centennial Corridor would attract truck traffic that currently uses local roadways, such as the Rosedale Highway portion of State Route 58. This would improve operation of the local roadways.
- ***Improve Interregional Goods Movement.*** State Route 58 provides a link to other state routes and interstate roadways that are used by trucks transporting goods beyond the local area. Providing an improved route would allow for more efficient goods movement.

No-Build Alternative

The No-Build Alternative would not have construction impacts or use local resources, nor would it enhance long-term productivity. This alternative would not provide long-term benefits. Congestion would increase as the population of Bakersfield grows.

3.5 Irreversible and Irretrievable Commitments of Resources that Would be Involved in the Proposed Project

Common to All Build Alternatives

The impacts of the build alternatives would be similar to each other because they are all providing similar types of improvements. Construction would require the commitment of natural, physical, human, and fiscal resources.

The build alternatives would demolish existing residential and non-residential buildings. Loss of existing developed properties and use of the land that would be acquired and added into the freeway/roadway right-of-way would be an irreversible and long-term commitment of this resource. As discussed in Section 3.1.4.2, Relocation and Property Acquisition, the demolished uses (both residential and business uses) would likely be relocated within the metropolitan Bakersfield area. Adequate replacement opportunities are available, but this would result in a commitment of available resources as replacement opportunities. And, though the number of replacement structures needed is a very small percentage of the projected long-term growth for the region, the relocated uses would reduce the amount of available inventory. New development would be needed to serve the projected growth for the region, so the loss of the current inventory may encourage new development, which would also require a commitment of similar non-renewable resources.

Construction of the build alternatives would also require use of fossil fuels, water, and construction materials such as concrete cement, aggregates (sand and gravel), asphalt, reinforcement bars, paint, fencing, pipes, and other materials. These materials are generally not retrievable once they have been used to build a road. These same resources are also used in other types of development, such as residential and commercial developments. Aggregates used for building the roads are a non-renewable resource. The California Department of Conservation's California Geological Survey estimates the 50-year demand for aggregate resources in California and the amount of resources permitted for mining. In 2006, it was estimated that about 32 percent of the 50-year demand was currently permitted. In the Bakersfield region, about 46 percent of the 50-year demand was provided for based on current permits. Though it is a commitment of non-renewable resources, the project would require a very small amount compared to the resources available.

Labor would be needed to make construction materials, demolish existing structures and infrastructure, and build the proposed improvements. Labor is not in short supply, and use of this labor would not have an adverse effect upon its continued availability in the city of Bakersfield or Kern County.

The project would also require a substantial one-time expenditure of local, state, and federal funds; the funds are not retrievable. Anticipated savings in energy consumption by vehicles, travel time, and a reduction in accidents would offset the financial commitment. In addition to the costs of construction and right-of-way acquisition, the project would also incur the costs for roadway maintenance, including pavement, roadside landscaping, litter/sweeping, signs and markers, electrical and storm maintenance. This long-term commitment would be balanced by the transportation benefits of the project.

Commitment of these resources would benefit residents and businesses in the metropolitan Bakersfield area, the Central Valley, and the state through an improved transportation system. These benefits would consist of improved accessibility, which is expected to outweigh the irreversible and irretrievable commitment of resources.

No-Build Alternative

The No-Build Alternative would require no commitment of resources because no changes to the existing environment would occur.

3.6 Construction Impacts

Affected Environment

To understand the temporary construction impacts associated with the Centennial Corridor build alternatives, a typical construction sequence is provided.

Construction Sequence

Project construction would commence after the City of Bakersfield and County of Kern complete acquisition of all the right-of-way for the project. The construction

sequence would begin with site clearing of all improvements, which includes demolition of buildings and structures, followed by utility relocation, roadway construction, and landscaping/finishing work. A construction schedule of about 30 months is expected to complete the project, as shown in Table 3.48. The construction schedule is currently expected to extend from 2016 to 2018.

A Traffic Management Plan would be developed to reduce the impacts of traffic congestion and detours during construction. Except for short-term closures to install bridge falsework (temporary supports while the bridge is being built), most of the arterial roadways and most secondary streets crossing the construction corridor would remain open during construction. BNSF Railway operations would not be interrupted or delayed during construction. Some nighttime work would be planned on busy thoroughfares to minimize traffic disruption, especially when temporary lane or road closures are required.

The typical construction sequence for a project of this type and scale is described below for the purpose of impact assessment. The actual construction process would be determined by the contractor in accordance with requirements of the construction contract. Construction would likely be done in phases to minimize impacts to local residents and businesses. The timing of construction in certain areas, such as in the vicinity of active bird nests, would have to be scheduled in accordance with the seasonal restrictions, as described below under *Avoidance, Mitigation and Minimization Measures*.

The contractor would require temporary laydown and staging areas for field trailers, storage and equipment, and construction-related activities within the vicinity of the project corridor. The contractor may propose to set up temporary rock-crushing equipment on the construction site to recycle concrete and asphalt rubble for use as base material to be placed under the street pavement. The contractor may also propose to set up and operate an on-site batch plant to prepare Portland cement concrete or hot-mix asphalt. Soil disposal would be undertaken according to the regulatory requirements. In the event the borrow/fill is needed, the contractor would identify the borrow sites.

Step 1: Mobilization and Staging

The first step in the construction process involves contractor preparation of the site for construction activities. This would be done after all required preconstruction surveys are conducted and permits are obtained.

Step 2: Site Clearing and Demolition

Under this step, the roadway alignment would be cleared of conflicting structures and vegetation to prepare the site for construction. Asphalt and concrete from roadways, parking lots, and walkways would be removed and disposed.

Table 3.48 Typical[1] Construction Sequencing

Step	Activity	Months																													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
1	Mobilization and Staging																														
2	Site Clearing and Demolition																														
3	Utility Relocation																														
4	Roadway Construction (including structures)																														
5	Landscaping and Finish Work																														

1. Actual construction process to be determined by the contractor in accordance with requirements of the construction contract.
Source: Caltrans, 2013.

Step 3: Utility Relocation

Electrical transmission towers, oil wells, canal culverts, and other existing utilities that would interfere with construction would be removed and relocated, or encased for continuing service, by the utility provider or their contractors. Each utility would be restored or replaced in accordance with design plans, and within close proximity to its former location to allow access in conjunction with the new highway facility. Not all utility relocations would occur at the beginning of the project; some could be done at a later stage of construction, as appropriate.

Step 4: Roadway Construction

Roadway construction activities would involve site excavation, grading, and pavement installation. Bridges, overcrossings, undercrossings, soundwalls, and retaining walls along the roadway alignment would be built in parallel with the roadway construction. Traffic signals would also be installed.

Step 5: Landscaping and Finish Work

Work under this step would include installation of irrigation systems and plant materials, lane striping, signage installation, and removal of all temporary structures.

Environmental Consequences

Impacts to various environmental resources as a result of project construction are discussed below. Unless noted, the impacts identified would be the same for all three build alternatives. Applicable measures to reduce these potential impacts are provided below under Avoidance, Minimization and/or Mitigation Measures.

Parks and Recreation

With Alternative A, indirect impacts associated with noise may diminish the enjoyment of park use next to construction activities at the Kern River Parkway, including the Kern River Multi-Use Trail, Hoey Trail, and equestrian trails. These impacts would be inconveniences, but would not substantially alter the use of the park.

Alternative B would result in indirect effects (such as noise) on Centennial Park and along the Kern River Multi-Use Trail, Hoey Trail and equestrian trails on the south and north sides of the Kern River during construction, but would not substantially alter use of the park.

Alternative C would result in indirect noise and air emission impacts that would affect the Kern River Multi-Use Trail, Hoey Trail and equestrian trails on the south and north sides of the Kern River during construction. These impacts would be inconveniences and would not substantially alter the use of the park.

Alternative C would provide replacement parkland and recreational improvements at Saunders Park. Though the improvements would be made before there would be any displacement of park uses, there would be some potential disruption from construction activities when the new park facilities are being built and the old

facilities are being cleared. Indirect impacts associated with noise may diminish the enjoyment of park use next to construction activities at Saunders Park. These impacts would be inconveniences, but would not substantially alter use of the park.

Farmlands

Intersection improvements at Stockdale Highway and State Route 43 for any alternative would result in temporary construction impacts to about 4 acres of Prime Farmland and to about 0.5 acre of 1 parcel under a Williamson Act contract. The parcel under a Williamson Act contract is located to the southwest of the intersection. A temporary construction easement is required for the temporary construction impacts which include construction equipment staging and relocating irrigation lines. Areas affected by the temporary construction impacts would be restored and usable when the improvements are completed.

Community Impacts

During construction of the Centennial Corridor, detours and delays would be experienced by local residents, particularly to those living in neighborhoods next to the selected build alternative. Access within the study area and other parts of Bakersfield would be maintained so no area would be isolated by construction activity. At times, this may mean that local traffic may have to use alternate routes to avoid construction zones, forcing residents of the area to use less direct routes to reach their preferred destination. These impacts would be temporary.

Although access to some neighborhoods would be disrupted and detoured for short periods during construction, access would continue to be available to all businesses and residences, except in cases where such buildings would be displaced by the project and would be acquired as part of the right-of-way needs.

Construction impacts would include temporary increases in noise and dust, visual changes, and traffic congestion related to temporary road closures or detours. These impacts would be temporary and would not disproportionately affect a low-income or minority population because everyone in the project area would experience these impacts.

With implementation of community impacts standard conditions (SC-CI-1 through SC-CI-4) identified under Avoidance, Minimization, and Mitigation Measures – Community Impacts, Standard Conditions (see page 348), adverse impacts would be minimized.

Utilities/Emergency Services

Utilities

Several utility facilities and lines would be removed and relocated during project construction. This would be done through standard engineering practices to avoid service interruptions. With implementation of standard conditions (SC-CI-5 and SC-CI-6) identified under Avoidance, Minimization, and Mitigation Measures –

Utilities and Emergency Services, Standard Conditions (see page 349), adverse impacts would be minimized.

Emergency Services

The build alternatives would result in short-term construction impacts to emergency services; occasional travel delays would occur due to traffic detours, off-peak lane closures, shoulder closures, and lane shifts.

Emergency vehicle access for police, fire protection, and emergency services would be maintained at all times. Law enforcement, fire, and emergency services could experience slightly increased response times because of construction-related road closures, temporary detours, and increased traffic congestion. It is not expected that temporary road closures would result in more than 1 mile of out-of-direction travel because nearby alternative routes would be maintained and identified as part of the detour plans.

With implementation of construction utilities/emergency services standard conditions (SC-CI-5 through SC-CI-7) identified under Avoidance, Minimization, and Mitigation Measures - Utilities and Emergency Services, Standard Conditions (see page 349), adverse impacts would be avoided or minimized.

Traffic and Transportation/Pedestrian and Bicycle Facilities

The project would temporarily affect motoring vehicular, bicycle, and pedestrian traffic during construction. The potential for traffic disruption would mostly exist where bridge crossings would be built, at connections to existing road and highway facilities, and where ramp work would be done, including ramp closure work. The duration of construction travel-time delays could be expected to last from a few days to more than a year in various construction zones and may require motorists to adjust their schedules to accommodate longer travel times. Based on the temporary nature of the roadway closures, implementation of a Traffic Management Plan and public outreach program (see Standard Conditions SC-CI-8 and SC-CI-9 (see page 349), under the Avoidance, Minimization, and Mitigation Measures heading) would minimize impacts related to increased travel time and distance.

Construction within the public right-of-way would also affect transit service on a temporary basis, from delays due to traffic detours and work zone operations. Some bus routes would also be affected, and coordination would be necessary to arrange for temporary relocation to nearby locations.

Temporary construction easements would be required at various roadway segments under construction to accommodate construction activities. Access in and out of any residential homes and local businesses would not be blocked, and obstructions would be minimized to the extent possible. A listing of the temporary construction easements is provided in Appendix G, Volume 2. About 10 percent of the overall parking space acquisitions described in Section 3.1.6, Traffic and Transportation/ Pedestrian and Bicycle Facilities, of this document would be temporarily required for construction easement purposes and would be restored after construction.

On-street parking would be restricted in and surrounding work areas to accommodate construction equipment and materials. Where it exists, on-street parking would be restored after construction is completed.

Short-term bicycle and pedestrian detours, likely to include bike lane re-routing on affected arterials, would occur during construction. Implementation of both the Traffic Management Plan and public outreach program throughout the construction period would minimize impacts in this regard.

With implementation of standard conditions (SC-CI-8 through SC-CI-10) identified under Avoidance, Minimization, and Mitigation Measures - Traffic and Transportation/Pedestrian and Bicycle Facilities, Standard Conditions (see page 350), impacts during project construction would be minimized and not considered adverse.

Visual/Aesthetics

Construction activities would temporarily alter the visual and aesthetic environment from the vantage point of homes and other properties surrounding the construction site. These images, including the presence and operation of construction equipment (such as heavy trucks, cranes, or excavators), would generally be visually disruptive and may be undesirable to some affected individuals or groups.

During right-of-way acquisition, which is expected to take about two years, buildings and homes would be acquired and demolished by the City of Bakersfield. To minimize safety, graffiti and vagrancy problems associated with vacant buildings, a strategy for handling the acquired properties would be developed to include the following options: 1) rent the homes and businesses on a month-to-month basis to keep them occupied as long as possible in advance of demolition; or 2) demolish each building as soon as feasible after acquisition. This latter option would result in vacant lots interspersed in business areas and neighborhoods. With either option, proper management of acquired property is a key consideration with regard to avoiding a visual impacts to the remaining uses. Temporary visual impacts would be minimized by adhering to Caltrans Standard Specifications for construction, such as the use of opaque temporary fencing around construction staging areas. Also, soundwalls would be constructed first, wherever possible, to partially or fully obstruct views from surrounding properties.

Cultural Resources

Though there are no known archaeological sites in the project area, construction activities have the potential of disturbing or destroying unknown sites that are currently buried. Implementation of standard conditions (SC-CI-11 and SC-CI-12) and Minimization Measures CI-1 and CI-2), identified under Avoidance, Minimization, and Mitigation Measures – Cultural Resources (see pages 350 and 351), will help minimize impacts to cultural resources during construction. Should a previously unidentified and/or unevaluated archaeological resource or resource segment that meets any of the eligibility criteria for the National Register of Historic Places be discovered or impacted during project activities and adverse effects pursuant to 36 CFR 800.5 cannot be avoided, actions shall be taken in compliance

with 36 CFR 800.13 and the terms of the First Amended Programmatic Agreement (2014).

Hydrology and Floodplain

The project would include design components intended to minimize hydrological and floodplain impacts during construction. For example, the existing drainage flow pattern would be retained to the extent feasible. During rough grading, infiltration basins would be excavated to provide controls for temporary storm water runoff. Also at this stage of construction, culvert drainage facilities would be installed underneath alignment embankments, where required, to maintain existing stormwater runoff patterns in the study area. Stormwater runoff from the construction site would be controlled within the site so that construction-related drainage would not overflow onto adjacent properties or public streets and would not adversely affect existing drainage systems. Following work within the Kern River channel, river bottom contours would be restored to pre-existing conditions.

The project would use appropriate best management practices designed to provide temporary erosion and sediment control as well as control for potential pollutants other than sediment. These include the following construction-related best management practices for roadway projects: soil stabilization, sediment control, wind erosion control, tracking control, non-stormwater management, and waste management and materials pollution control. As a result, these best management practices would minimize stormwater and non-stormwater impacts during construction. Site-specific best management practices would be evaluated in the Storm Water Pollution Prevention Plan. Best management practices would also need to be implemented to keep excavation work outside the channel area with flowing water. If flowing water in the Kern River needs to be channelized so the water does not interfere with excavation work, a Surface Water Diversion Plan for approval by the Regional Water Quality Control Board and U.S. Army Corps of Engineers would be necessary.

Compliance with existing regulations would apply to project design and construction that would minimize construction impacts to floodplains as presented in Section 3.2.1, Hydrology and Floodplain (Standard Condition SC-FP-1).

Water Quality and Storm Water Runoff

Construction activities could contribute pollutants to receiving water bodies (see Figure 3-29) from runoff and discharges. Pollutants that could be generated by construction activities include vehicle fluids (oils, grease, and coolant), cement and masonry products, landscaping-related products, and excavation materials. Some pollutants can lead to turbidity (cloudiness), which blocks light transmission and penetration, reduces oxygen levels, affects the food chain, and creates changes in water temperature. Pollutants in stormwater could also cause chemical degradation and aquatic toxicity in the receiving waters, adversely affecting the survival of plant and animal species, their populations, and the ecosystem structure.

Compliance with the Construction General Permit (Order No. 2009-0009-DWQ, as amended by 2010-0014-DWQ), would minimize construction water quality impacts. In addition, construction site best management practices that would be included in the Storm Water Pollution Prevention Plan would be implemented to minimize pollutants in the stormwater during project construction.

A risk analysis was done for the project based on characteristics of the project area, construction dates, and receiving waters. The analysis showed that the Kern Delta watershed sediment risk factor is low and the receiving water risk factor is low. The combined risk level of the project is ranked as Level 1, which requires the discharger to prepare and implement a Storm Water Pollution Prevention Plan and conduct monitoring and record keeping.

With implementation of standard conditions (SC-CI-13 through SC-CI-18) listed under Avoidance, Minimization, and Mitigation Measures - Water Quality and Storm Water Runoff, Standard Conditions (see pages 351 and 352), water quality and storm runoff construction impacts would not be adverse.

Geology/Soils/Seismic/Topography

As described in Section 3.2.3, the soils encountered in the borings indicate that the upper subsurface materials are susceptible to caving during construction. Though soils have the potential to cave, standard construction practices would protect the construction crew from the collapse of slopes within excavation areas and trenches. This would apply for all areas where trenching is required. These practices are stipulated by the Occupational Safety and Health Administration's Safety and Health regulations for construction. No other adverse impacts associated with geology, soils, seismic, or topography are anticipated.

Paleontology

Construction-related earth-moving activities have a high potential to adversely affect paleontological resources where the project area is underlain by Pleistocene Nonmarine Sedimentary Deposits and, at depths at least 3 feet below current grade, Recent Alluvial Fan Deposits of the Great Valley, Recent Basin Deposits of the Great Valley, and Recent River and Major Stream Channel Deposits of the Great Valley. Such earth-moving activities would include excavation for those segments of roadways that would be below current grade, excavation of retention basins, and trenching for pipelines and culverts.

Excavation activities could reach depths up to 40 feet below the current ground surface. Potentially affected resources could include previously unrecorded fossil remains, the respective fossil localities, associated specimen data and corresponding geologic and geographic locality data, and the fossil-bearing strata. The disturbance or loss of these resources would be an adverse environmental impact.

The maximum depth of excavation for Alternative A is 40 feet. This would occur near State Route 58 between Stephens Drive and H Street to accommodate the widened ramps. On State Route 99, the maximum excavation would be about

18.5 feet and would occur between Belle Terrace and Ming Avenue. Seven drainage basins would be placed throughout the study area to retain stormwater runoff for water quality improvement purposes.

The maximum depth of excavation for Alternative B is 40 feet. This would occur near State Route 58 between Stephens Drive and H Street to accommodate the widened ramps and, between California Avenue and Ford Avenue, where the freeway would be built below the existing grade. On State Route 99, the maximum excavation would be about 18.5 feet, between Belle Terrace and Ming Avenue. Eight drainage basins would be placed throughout the study area to retain stormwater runoff for water quality improvement purposes.

The maximum depth of excavation for Alternative C is 30 feet. This would occur near State Route 58 between Stephens Drive and H Street to accommodate the widened ramps. On State Route 99, the maximum excavation would be about 18.5 feet and be located between Belle Terrace and Brundage Lane. Eleven drainage basins would be placed throughout the study area to retain stormwater runoff for water quality improvement purposes.

The potential impact of earth-moving activities would be greatest under Alternative B, in which the most sediment in the Recent Alluvial Fan Deposits of the Great Valley would be disturbed, particularly with regard to excavation for roadways that would be below current grade. Correspondingly, the impact of such excavation would be less with Alternative C and least for Alternative A. Adverse impacts on paleontological resources, particularly fossil remains and associated locality data, would be reduced with implementation of Mitigation Measures CI-3 through CI-16 identified under the Avoidance, Minimization, and Mitigation Measures (see pages 352 through 354). There would be no impact on paleontological resources under the No-Build Alternative.

Hazardous Waste or Materials

During demolition and construction phases of the project, there is a limited risk of accidental release of hazardous materials such as gasoline, oil or other fluids in the operation and maintenance of construction equipment. As a result of construction activities, asbestos, lead-based paint, and/or aerially-deposited lead may also be encountered. Standard condition SC-CI-19, identified under Avoidance, Minimization, and Mitigation Measures – Hazardous Waste and Materials, involves developing a Health and Safety Contingency Plan to address emergency procedures to be implemented in the event of accidental release or other emergency involving hazardous waste and materials to ensure public safety and to minimize the potential impact on the environment. Compliance with federal, state, and local regulations would also address worker safety handling such materials. During construction, oil wells within the proposed right-of-way may be encountered. Implementation of the standard condition SC-U-1 identified in Section 3.1.5, Utilities/Emergency Services, would address construction impacts to oil wells.

Air Quality

Criteria Pollutants

Construction of the project has the potential to create air quality impacts through the use of heavy-duty construction equipment within the construction site and through vehicle trips generated from haul trucks and construction workers traveling to and from the project site. In addition, fugitive dust emissions would result from earthwork (such as grading, excavation) and onsite construction activities. Off-road (onsite) mobile source emissions, primarily nitrogen oxides and carbon monoxide, would result from use of construction equipment such as excavators, bulldozers and loaders. During the finishing phase, paving operations and application of architectural coatings and other building materials would release reactive organic compounds and off-gassing products (paints and asphalt, for example). Construction emissions can vary substantially from day to day, depending on the level of activity, the specific mix of construction equipment and, for dust, the prevailing weather conditions.

Methodology

As recommended by the San Joaquin Valley Air Pollution Control District and approved by Caltrans, construction-related emissions of criteria pollutants were estimated using the *Road Construction Emission Model, Version 7.1.4* (the latest version, which was released in August 2013). The model was developed for the Sacramento Metropolitan Air Quality Management District and approved by the California Air Resources Board.

Construction Emissions

Construction emissions were estimated using the Sacramento Metropolitan Air Quality Management District's *Road Construction Emissions Model, Version 7.1.4*. Table 3.49 shows the calculated mass daily emissions for each phase of construction and the annual emissions (in tons) during each year of construction for comparison with the San Joaquin Valley Air Pollution Control District's significance criteria. As shown, construction emissions of reactive organic gases and inhalable particulate matters less than 10 microns in diameter (PM_{10}) do not exceed the district's criteria. Nitrogen oxides emissions would potentially exceed the 2 tons per year criterion established by the district's Rule 9510; therefore, these emissions need to be reduced to 20 percent of the state fleet average, as required by the rule. Reductions need to be achieved either by onsite mitigation measures or through payment of an offsite mitigation fee, as required by Rule 9510. Compliance with the standard conditions (SC-CI-20 through SC-CI-22) listed under Avoidance, Minimization, and Mitigation Measures - Air Quality, Standard Conditions (see pages 354 through 356), would reduce construction emissions.

Table 3.49 Estimate of Unmitigated Construction Emissions

Construction Stage (Duration)	Total or Onsite	Construction Daily Emissions (pounds per day)							
		Reactive Organic Gases	Carbon Monoxide	Nitrogen Oxides	Inhalable Particulate Matter (PM_{10})		Fine Particulate Matter ($PM_{2.5}$)		Carbon Dioxide
					Exhaust	Total	Exhaust	Total	
Site Clearing/Demolition (2.5 months)	Total	5.1	23.8	28.2	1.6	51.6	1.5	11.9	3,719
	Onsite	*4.8*	*21.0*	*27.9*	*1.6*	*51.6*	*1.4*	*11.8*	*3,120*
Grading/Excavation (12 months)	Total	15.9	77.1	314.5	9.6	59.6	7.3	17.7	55,395
	Onsite	*11.3*	*53.7*	*100.4*	*5.1*	*55.1*	*4.7*	*15.1*	*10,045*
Utilities/Subgrade (10.5 months)	Total	9.7	49.7	75.0	4.2	54.2	3.8	14.2	9,073
	Onsite	*9.3*	*45.5*	*74.6*	*4.1*	*54.1*	*3.7*	*14.1*	*8,074*
Paving/Finish Work (5 months)	Total	5.1	29.4	31.4	2.0	2.0	1.8	1.8	4,840
	Onsite	*4.8*	*26.1*	*31.0*	*1.9*	*1.9*	*1.8*	*1.8*	*3,991*
Maximum Daily	Total	15.9	77.1	314.5	9.6	59.6	7.3	17.7	55,395
	Onsite	*11.3*	*53.7*	*100.4*	*5.1*	*55.1*	*4.7*	*15.1*	*10,045*
Construction Year		**Construction Annual Emissions (tons per year)**							
Year 1	Total	1.88	8.71	33.64	1.04	7.64	0.80	2.18	5,344.25
	Onsite	1.32	6.19	**11.26**	0.58	7.18	0.53	1.90	1,030.15
Year 2	Total	1.45	7.31	16.49	0.70	7.30	0.60	1.97	2,242.05
	Onsite	1.28	6.23	**10.56**	0.56	7.16	0.52	1.89	1,016.04
Year 3	Total	0.38	2.16	2.55	0.16	0.71	0.14	0.26	332.04
	Onsite	0.36	1.94	**2.53**	0.15	0.70	0.14	0.25	279.71
San Joaquin Valley Air Pollution Control District Significance Criteria (tons/year)		10.0	–	2.0	2.0	–	–	–	–

Notes:

- Emissions were estimated using the Sacramento Metropolitan Air Quality Management District's Road Construction Model, version 7.1.4(2009).
- Exceedances of the criteria are shown in **bold**. Note that the criteria are set for onsite emissions from equipment exhaust gases.
- Annual carbon dioxide data are in metric tons.
- Copies of the model sheets are provided in the *Air Quality Study Report.*
- Large particulate matter: Particulate Matter less than 10 microns in diameter (PM_{10}); Fine particulate matter: Particulate Matter less than 2.5 microns in diameter ($PM_{2.5}$).

Source: Air Quality Study Report 2013.

Air Toxics and Asbestos

Potential for air toxics emissions during construction would be related to diesel particulate matter emissions associated with heavy equipment operations. However, the health effects from carcinogenic air toxics at sensitive receptors would be considered less than significant because the risk posed by these pollutants is based on long-term (70-year lifetime) exposure. Given the construction schedule of 2.5 years, the project would not result in a long-term (that is, 70 years) substantial source of air toxics emissions. Potential impacts related to air toxics emissions during construction would not be substantial, and no mitigation measures are required.

According to the California Division of Mines and Geology (2003), Kern County is not among areas listed as containing naturally occurring asbestos (Governor's Office

of Planning and Research 2000). Therefore, the potential for construction activities to disturb naturally occurring asbestos is low. Mitigation measures are not required.

Odors

During project construction, objectionable odors would be related mainly to operation of diesel-powered equipment and to off-gas emissions during road-building activities, such as paving and asphalting. District Rule 4601 (Architectural Coatings) limits the amount of reactive organic gas emissions from paving, asphalt, concrete curing, and cement coating operations. Construction of the project would be performed in compliance with the San Joaquin Valley Air Pollution Control District rules.

While construction equipment onsite would generate some objectionable odors (mainly from diesel exhaust), these emissions would generally be limited to the project site and would be temporary. Most potential sensitive receptors are far enough from the project site so that odors would not affect a substantial number of people. No mitigation measures would be required.

Valley Fever

Construction of the project would occur in an endemic area where the fungi *Coccidioides immitis* have been known to naturally occur. Coccidioidomycosis, also known as Valley Fever, is a common cause of pneumonia in the endemic areas in which the fungus occurs, such as Kern County. Because the spores of *Coccidioides immitis* can become airborne during soil disturbance, all persons residing or traveling through Kern County are susceptible to the disease. Temporary soil disturbance during construction grading activities could cause fungal spores (if present) to become airborne, potentially putting construction personnel, residents, and wildlife at risk of contracting Valley Fever. However, there are a number of preventive and precautionary measures that can be undertaken to reduce exposure and which include the use of dust masks when conducting outdoor activities, such as field studies or performing construction activities in the winter months; seeking prompt medical treatment if flu-like or respiratory illness occurs during or within a few weeks following fieldwork or construction activities; getting a coccidioidin skin test to determine susceptibility to the disease; and educating all members of the field party and construction crew about the possibilities and consequences of infection. Compliance with Avoidance and Minimization Measure SC-CI-21 (see pages 355 and 356), would control dust during project construction. As a result, those measures would reduce the potential for contact with *Coccidioides immitis* spores, and as such, the potential for health impacts during construction of the project associated with Valley Fever would be minimized.

Noise and Vibration

Noise from construction activities may intermittently dominate the environment in the immediate area of construction. Table 3.50 shows noise levels produced by construction equipment commonly used on roadway construction projects.

Table 3.50 Construction Equipment Noise

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

dBA: A-weighted decibels

Source: *Federal Transit Administration* 2006.

Equipment involved in construction is expected to generate noise levels ranging from 80 to 89 dBA at a distance of 50 feet. Noise produced by construction equipment would be reduced over distance at a rate of about 6 dB per doubling of distance. More precise construction noise levels cannot be calculated at this time because some of the necessary data such as the type of equipment, effective usage factor, and number of each equipment type have not yet been designated.

Construction noise varies greatly depending on the construction process, type, and condition of equipment used, as well as layout of the construction site. Many of these factors are traditionally left to the contractor's discretion, which makes it difficult to accurately estimate levels of construction noise. Temporary construction noise impacts would be unavoidable at areas right next to the project alignment.

The noise level requirement specified here shall apply to the equipment on the job or related to the job, including but not limited to trucks, transit mixers, or transient equipment that may or may not be owned by the contractor.

Sound control shall conform to the provisions in Section 14-8.02, "Noise Control," of the Standard Specifications and Section 14-8.02, "Noise Control," of the Standard Special Provisions. According to requirements of these specifications, construction noise cannot exceed 86 dBA at 50 feet from the job site activities from 9:00 in the evening to 6:00 in the morning.

It is possible that certain construction activities could cause intermittent localized concern from vibration in the project area. During certain construction phases, processes such as earth moving with bulldozers, the use of vibratory compaction rollers, impact pile driving, demolitions, or pavement braking may cause construction-related vibration impacts such as human annoyance or, in some cases, building damages. It may be necessary to use this type of equipment close to residential buildings. Implementation of minimization measure CI-17 (see page 358) would eliminate or minimize vibration impacts during construction activities.

Mitigation techniques for control of equipment noise and vibration plus administrative measures, when properly implemented, can provide the most effective means to minimize the effects of construction activity impacts. These standard conditions (SC-CI-23 through SC-CI-25) are listed under Avoidance, Minimization, and Mitigation Measures – Noise and Vibration, Standard Conditions (see pages 357 and 358).

Energy

The project would result in one-time non-recoverable energy costs associated with construction activities. Fuel use during construction activities is the largest source of energy usage for construction. Table 3.51 shows the calculated energy use by construction year based on the estimates of fuel use that would be used during construction.

Table 3.51 Centennial Corridor Calculated Construction Energy Use

Year	Btu (in million Btu)
Year 1	72.26
Year 2	30.31
Year 3	4.49
Total	107.06

Btu: British thermal units

* Assumes diesel fuel is used during construction

Source: Source data from *Air Quality Study Report* 2013.

In addition to direct energy expenditures, such as preparing the ground surface and building the highway, there would also be indirect energy consumption such as the manufacture of building materials. Temporarily increased traffic congestion on local roads during construction would also result in additional energy consumption. Short-term use of oil, gas, and electricity for construction would minimally reduce the overall amount of global fossil fuels available for consumption. However, this use should be considered within the context of substantial energy savings over the design life of the project, as described in Section 3.2.8, Energy. In addition, standard condition SC-CI-26, listed on page 359), under Avoidance, Minimization, and Mitigation Measures – Energy, would reduce energy use during construction.

Biological Environment

Construction of the project would include use of heavy equipment to clear vegetation and grade the project site. This activity would create noise, dust, and vibration that could adversely affect animals within and next to the construction site. This disturbance could cause animals to move away from construction. Habitat next to the construction site may not be used by species sensitive to construction noise, dust, and vibration effects. Vibration could collapse the burrows or dens of burrowing animals.

Silt runoff from the project site or improper disposal of petroleum and chemical products from construction equipment could adversely affect water quality during

construction. Adverse effects on water quality could affect plants, animals, and habitats downstream of construction areas, including areas along the Kern River.

Night lighting during construction of the project could spill over into the adjacent open space and could adversely affect foraging activities of nocturnal species (such as the San Joaquin kit fox, burrowing owl, bats, and other small mammals) and may also increase predation of small mammals. Therefore, the project's night lighting may affect nocturnal wildlife, especially along the Kern River.

If construction limits are not clearly marked, construction operators could inadvertently remove habitat that should not be removed. Because the project includes sensitive habitat along the Kern River, this effect could be potentially substantial.

Compliance with the standard condition SC-CI-27 and minimization and mitigation measures CI-18 through CI-25 (see pages 359 through 363) and B-1 through B-4 provided in Section 3.3 Biological Environment, would reduce construction impacts.

Avoidance, Minimization, and Mitigation Measures

Standard conditions and minimization and mitigation measures would reduce construction-related impacts to various resources described in the previous sections.

Community Impacts

Standard Conditions

SC-CI-1 To the extent practical, street closures required during construction shall be scheduled to occur during nighttime hours. This requirement will be addressed in the Traffic Management Plan to be prepared during the final design phase of project development.

SC-CI-2 To the extent practical, the contractor shall avoid blocking or limiting access to businesses during construction during normal business hours. Businesses will be contacted and advised of nearby construction activities before their commencement.

SC-CI-3 Caltrans shall notify emergency service providers, such as fire, police, and ambulance services in advance of construction of the timing, location, and duration of construction activities and the locations of detours and lane closures.

SC-CI-4 During the final design phase, the City of Bakersfield and Caltrans in coordination with affected facility owners or operators shall develop and implement access plans for highly sensitive land uses such as police and fire stations, transit stations, hospitals, and schools.

Utilities and Emergency Services

Standard Conditions

SC-CI-5 Caltrans and the City of Bakersfield shall coordinate with all affected private and public service utilities in advance of the construction. Per Caltrans requirements, all linear underground utilities within Caltrans' right-of-way will be encased from right-of-way to right-of-way in either steel or concrete.

SC-CI-6 In accordance with the requirements in the California Code of Regulations, prior to the initiation of construction, the contractor shall coordinate and notify the operators of underground or overhead utility and service lines prior to any excavation activities. This coordination would avoid damage to existing utility lines and would limit disruption to existing utility services to the existing developments near the proposed alignments.

The following standard conditions would avoid and/or minimize adverse effects of the Centennial Corridor on emergency services:

SC-CI-7 The contractor shall conduct construction activities in accordance with the approved Traffic Management Plan for the project and Caltrans' Manual of Uniform Traffic Control Devices to reduce impacts to emergency services and response. Coordination of roadway closures with appropriate emergency services would be addressed in the Transportation Management Plan.

Traffic and Transportation/Pedestrian and Bicycle Facilities

Standard Conditions

SC-CI-8 Caltrans shall require the design team to develop a Traffic Management Plan to offset the effects of access restrictions and traffic congestion during construction of the freeway, ramps, and on local streets. The Traffic Management Plan will consider methods such as adjustment of signal timing and/or signal coordination to increase roadway efficiency; turn restrictions at intersections and roadways necessary to reduce congestion and improve safety; and parking restrictions on detour routes during work hours to increase capacity, reduce traffic conflicts, and improve access. The Traffic Management Plan will include a traffic contingency plan with procedures to be implemented for possible unforeseen circumstances and emergencies.

SC-CI-9 Caltrans shall require the contractor to provide motorist alert and awareness information during construction, as appropriate for the conditions, to include the following options: changeable message signs, stationary ground-mounted signs, traffic radio announcements, and the Caltrans Highway Information Network.

SC-CI-10 Caltrans, in coordination with the City of Bakersfield, shall coordinate with Golden Empire Transit and other affected transit providers to request and comply with applicable procedures for any required temporary bus stop relocations or other disruptions to transit service during construction.

Visual/Aesthetics

Measure V-1 presented in Section 3.1.7, Visual/Aesthetics would minimize visual impacts during construction.

Cultural Resources

In addition to the standard conditions and minimization measures listed below, Mitigation Measure CR-2 provided in Section 3.1.8, Cultural Resources, would reduce indirect adverse vibration effects to contributing elements of Rancho Vista Historic District, associated with the construction of Alternative A.

Standard Conditions

SC-CI-11 In accordance with Caltrans standard specifications, if cultural materials are discovered during construction, all earth-moving activities within and around the immediate discovery area will be diverted until a qualified archaeologist can assess the nature and significance of the find. If human remains are discovered, Section 7050.5 of the State Health and Safety Code states that further disturbances and activities shall stop in any area or nearby area suspected to overlie remains, and the county coroner shall be contacted. Pursuant to Section 5097.98 of the Public Resources Code, if the remains are thought to be Native American, the coroner will notify the Resident Engineer and the Native American Heritage Commission, who will then notify the Most Likely Descendent. At this time, the Resident Engineer will contact the District 6 Environmental Branch so that staff may work with the Most Likely Descendent on the respectful treatment and disposition of the remains. Further provisions of Section 5097.98 of the Public Resources Code are to be followed as applicable.

SC-CI-12 It is Caltrans' policy to avoid cultural resources whenever possible. Further investigation may be needed if resources cannot be avoided by the project. Additional survey(s) will be required if the project changes to include areas not previously surveyed.

Minimization Measures

CI-1 Prior to finalization of the environmental document, Caltrans shall conduct Stage II of the archaeological sensitivity model to field-check the preliminary buried site sensitivity model and to further analyze the areas believed to have high and very high archaeological sensitivity. Phase II subsurface testing, will focus on those locations along the selected alternative that require excavation into native sediments that are identified as high and very high sensitivity.

Pursuant to Caltrans' policy regarding Native American monitoring during construction activities in areas where there is a high probability of buried resources, and to ensure that Native American concerns are considered, Caltrans shall retain a Native American monitor from the Santa Rosa Rancheria Tachi Yokut Tribe, or other tribe expressing interest in the project, to monitor all subsurface testing related to Stage II of the buried site sensitivity model.

CI-2 Before starting construction activities in the areas identified as a result of the Stage II of the archaeological sensitivity model, Caltrans shall retain a qualified archaeologist and Native American representative to observe grading activities and to salvage and catalogue archaeological resources, as necessary. The archaeologist and Native American representative shall also:

- Be present at the pre-construction conference.
- Establish areas of archaeological sensitivity that would need archaeological resource surveillance based on data gathered from the field survey and the Extended Phase I Geoarchaeological Study.
- In cooperation with the Caltrans Resident Engineer, establish procedures for temporarily halting or redirecting work (including sampling, identification, and evaluation) to be followed in the event artifacts are discovered.

Water Quality and Storm Water Runoff

Standard Conditions

SC-CI-13 The project shall conform to the requirements of the Caltrans' National Pollutant Discharge Elimination System Statewide Storm Water Permit (Order No. 2012-0011-DWQ, NPDES No. CAS000003), adopted by the State Water Resources Control Board on July 1, 2013, and any subsequent permit in effect at the time of construction. In addition, the contractor shall comply with the requirements of the General National Pollutant Discharge Elimination System Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (Order No. 2009-0009-DWQ, NPDES No. CAS000002, as amended by 2010-0014-DWQ), also referred to as the Construction General Permit, as well as implementation of the best management practices specified in the Caltrans Storm Water Management Plan, to be prepared during the final design of the project.

SC-CI-14 The contractor shall develop an acceptable Storm Water Pollution Prevention Plan containing proven best management practices to minimize storm water pollution that have the potential to affect water quality. All construction site best management practices would follow the latest edition of the Storm Water Quality Handbooks and the Construction Site Best Management Practices Manual. In addition, the Storm Water

Pollution Prevention Plan shall include implementation of specific stormwater effluent monitoring requirements based on the project's risk level to ensure water quality standards are met.

SC-CI-15 During construction, when dewatering is required, the contractor shall fully conform to the requirements specified in Order No. R5-00-175, General Waste Discharge requirements for Discharges to Surface Water which Pose an Insignificant (De Minimus) Threat to Water Quality, from the Central Valley Regional Water Quality Control Board.

SC-CI-16 The contractor shall comply with all requirements of the Section 404 Permit issued by the U.S. Army Corps of Engineers for the discharge of dredged or fill material into waters of the United States.

SC-CI-17 The contractor shall comply with all requirements of the Section 401 Certification issued by the Regional Water Quality Control Board to ensure that all discharges comply with applicable federal and state effluent limitations and water quality standards.

SC-CI-18 The contractor shall comply with all requirements of the Streambed Alteration Agreement per Section 1602 of the California Fish and Game Code.

Paleontology

Mitigation Measures

A Paleontological Mitigation Plan will be prepared prior to project construction. The plan would include the following mitigation measures:

CI-3 Specifications for paleontological mitigation shall be included in the construction contract special provisions section for this project to advise the construction contractor of the requirement to cooperate with the salvage of paleontological resources, particularly fossil remains and associated locality data.

CI-4 A qualified principal paleontologist approved by Caltrans shall prepare a detailed Paleontological Mitigation Plan before the start of construction. The paleontologist must have a Master of Science/Arts (M.S./M.A.) or Doctor of Philosophy (Ph.D.) degree in paleontology or geology and will be familiar with paleontological salvage or mitigation procedures and techniques. All geological work will be performed under the supervision of a California Professional Geologist.

CI-5 Caltrans will perform paleontological monitoring and salvage during construction-related excavation and other earth-moving activities. Within the boundaries of the project area, no earth-moving activity shall be allowed without written authorization of the Resident Engineer. Caltrans will provide a Paleontological Salvage Team consisting of a qualified

Principal Paleontologist and Paleontological Monitors. The Resident Engineer will make arrangements for the Paleontological Salvage Team to be at the job site.

CI-6 If unanticipated fossils are discovered in an area of the project site not being actively monitored, the remains shall not be disturbed. The Resident Engineer shall direct that all work within a 60-foot radius of the discovery be stopped and that the area be protected. The Resident Engineer, in consultation with the paleontologist, will investigate and modify the dimensions of the protected area, if necessary. Paleontological resources will not be removed from the project site without authorization. Work will not resume within the specified radius of the discovery until authorized by the Resident Engineer.

CI-7 The Paleontological Salvage Team will be notified 15 days in advance of the start of excavation or any other earth-moving activity.

CI-8 The construction contractor shall attend a pre-construction meeting with the Paleontological Salvage Team and the Resident Engineer to establish procedures for cooperation in the event fossil remains are encountered and to provide for worker safety during monitoring and salvage activities. The Principal Paleontologist and the Caltrans paleontology coordinator will be present at pre-grading meetings to consult with grading and excavation contractors.

CI-9 Before any earth-moving activity, the Principal Paleontologist shall conduct an employee environmental awareness training session for all persons involved in that earth-moving activity.

CI-10 Before the start of earth-moving activities, the Paleontological Salvage Team will conduct a pre-construction field survey of the project area, and any exposed fossil remains will be recovered. A qualified Paleontological Monitor, under the direction of the Principal Paleontologist, will be onsite to inspect cuts and debris piles to allow for the discovery and recovery of larger fossil remains. Monitoring will be conducted at all times during original grading in areas underlain by highly important rock units. If necessary, additional personnel will be assigned to recover an unusually large or numerous fossil occurrence.

CI-11 The Paleontological Salvage Team will salvage fossil remains exposed by excavation and other earth-moving activities. The Resident Engineer, at the request of the Paleontological Salvage Team, may temporarily divert or stop such activities in the vicinity of a fossil locality to avoid disturbing the locality pending removal of the remains. When fossil remains are discovered, the Paleontological Monitor will recover them and contact a Principal Paleontologist for assistance, if necessary. Earth-moving

activities in these areas shall be halted or diverted to allow for the recovery of the remains in a timely manner.

CI-12 Bulk sediment or rock samples will be recovered from fossiliferous horizons and processed to allow for the recovery of microvertebrate and other microfossil remains, as determined necessary by the Principal Paleontologist.

CI-13 Fossil remains collected as a result of monitoring and salvage or sample processing will be cleaned, prepared, sorted, curated, and cataloged. Recovered specimens will be identified by appropriate paleontological specialists.

CI-14 Prepared fossils, along with copies of all pertinent field notes, photographs, and maps, shall then be deposited in a Caltrans-approved museum repository with paleontological collections and made available for future scientific study.

CI-15 A final report shall be completed by the Principal Paleontologist. The report shall outline the results of the mitigation program and will be signed by the Principal Paleontologist and Professional Geologist. A copy of the report will be supplied to the museum repository and to Caltrans.

CI-16 At the completion of the project, the Caltrans paleontological coordinator will prepare a paleontological stewardship summary with a list of any long-term commitments. The list will be provided to both Maintenance and Operations staff, including the Encroachment Permits office.

Hazardous Waste or Materials

Standard Condition

SC-CI-19 A Health and Safety Contingency Plan shall be prepared as part of the standard engineering design process.

Air Quality

Standard Conditions

SC-CI-20 Caltrans shall incorporate requirements into the contract specifications requiring that the contractor comply with the San Joaquin Valley Air Pollution Control District's Rule 9510 (Indirect Source Review). This rule applies to transportation or transit projects with construction exhaust emissions of at least 2 tons of nitrogen oxides or 2 tons of particulate matter (PM_{10}) per year. These projects are required to reduce their construction exhaust emissions of nitrogen oxides and particulate matter (PM_{10}), by 20 and 45 percent, respectively, compared to the statewide average for construction equipment. If, after implementation of all feasible onsite mitigation measures, the required emission reduction is not achieved, the rule provides a mechanism by which Caltrans can pay an

offsite mitigation fee to the district. Methods of calculating the offsite emission reduction fee are provided in Section 7.1.1 of Rule 9510 and the District's Rule 3180. District Rule 3180 establishes a 4 percent administration fee to cover the district's cost of operating an offsite emission reduction program.

Achieving a 20 percent nitrogen oxides reduction in exhaust emissions compared to the statewide fleet average can be met by implementing one or more of the following measures:

- Operate equipment with engines newer than 1996.
- Retrofit the existing equipment with control devices (e.g., exhaust oxidation catalyst).
- Use cleaner fuels such as liquid natural gas, compressed natural gas, or aqueous diesel fuel, where feasible.
- Prohibit truck idling in excess of 10 minutes, whenever practical.
- Use only well-maintained equipment; use proper planning to reduce rework and multiple handling of earth materials.
- Pay a mitigation fee to the air district to obtain reductions through incentive and other programs.

SC-CI-21 Caltrans shall incorporate requirements into the contract specifications requiring that the contractor comply with the San Joaquin Valley Air Pollution Control District's Regulation VIII (Fugitive PM_{10} Prohibitions) and shall implement all applicable control measures included in the District's Guide for Assessing and Mitigating Air Quality Impacts, specifically those measures listed in Table 6-2 (Regulation VIII Control Measures) and Table 6-3 (Enhanced and Additional Control Measures) of the document. Applicable mitigation measures as listed in these tables include the following:

- All disturbed areas, including storage piles that are not being actively used for construction purposes shall be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant, or they shall be covered with a tarp, another suitable cover, or vegetative ground cover.
- All onsite unpaved roads and offsite unpaved access roads shall be effectively stabilized of dust emissions using water or a chemical stabilizer/suppressant.
- All land clearing, grubbing, scraping, excavation, land leveling, grading, cut and fill, and demolition activities shall be effectively controlled of fugitive dust emissions by applying water or by pre-soaking.

- With the demolition of buildings up to six stories in height, all exterior surfaces of the building shall be wetted during demolition.
- When materials are transported offsite, all material shall be covered or effectively wetted to limit visible dust emissions, and at least 6 inches of freeboard space from the top of the container shall be maintained.
- All operations shall limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.
- Within urban areas, an owner/operator shall prevent carryout and trackout, or immediately remove carryout and trackout when it extends 50 feet or more from the nearest unpaved surface exit point of the site.
- Any construction site with 150 or more vehicle trips per day shall prevent carryout and trackout.
- The following measures shall be implemented at construction sites with high emissions of fugitive dust:
    - Limit traffic speed on unpaved roads to 15 miles per hour.
    - Install sandbags or other erosion-control measures to prevent silt runoff to public roadways from sites with a slope greater than 1 percent.
- The following measures shall be implemented at large construction sites near sensitive receptors:
    - Install wheel washers for all exiting trucks, or wash off tires of trucks and equipment leaving the site.
    - Install wind breaks at windward side(s) of construction areas.
    - Suspend excavation and grading activities when wind exceeds 20 miles per hour.
    - Limit areas subject to excavation, grading, and other earthwork activity at any one time.

SC-CI-22 Caltrans shall incorporate requirements into the contract specifications requiring that the contractor comply with the limitations of the National Emissions Standards for Hazardous Air Pollutants regulations as listed in the CFR requiring notification and inspection for the construction activities that are involved with demolition, renovation, or removal of asbestos-containing materials. Before starting any demolition or renovation of any building, Caltrans shall require the contractor to consult with the San Joaquin Valley Air Pollution Control District's Compliance Division to determine inspection and compliance requirements.

Noise and Vibration

In addition to the standard conditions and minimization measures listed below, Mitigation Measure CR-2 provided in Section 3.1.8, Cultural Resources, would reduce indirect adverse vibration effects to contributing elements of Rancho Vista Historic District, associated with the construction of Alternative A.

Standard Conditions

SC-CI-23 The contractor shall be required to adhere to the following equipment noise-control measures:

- Each internal combustion engine used for any purpose on the job or related to the job shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated on the job site without an appropriate muffler.
- Construction methods or equipment that will provide the lowest level of noise and ground vibration impact (for example, avoid impact pile driving near residences and consider alternative methods that are also suitable for the soil condition) shall be used.
- Idling equipment shall be turned off.
- Construction activities shall be coordinated to build recommended permanent soundwalls during the first phase of construction to protect sensitive receivers from subsequent construction noise, dust, light, glare, and other impacts, to the extent feasible.
- Temporary noise barriers shall be used and relocated, as needed, to protect sensitive receptors against excessive noise from construction activities involving large equipment and by small items such as compressors, generators, pneumatic tools, and jackhammers. Noise barriers can be made of heavy plywood, moveable insulated sound blankets, or other best available control techniques.
- Newer equipment with improved noise muffling shall be used, and all equipment items shall have the manufacturers' recommended noise-abatement measures (such as mufflers, engine covers, and engine vibration isolators) intact and operational. Newer equipment will generally be quieter in operation than older equipment. All construction equipment shall be inspected at periodic intervals to ensure proper maintenance and presence of noise-control devices (such as mufflers and shrouding).
- Construction activities shall be minimized to the extent possible in residential areas during evening, nighttime, weekend, and holiday periods. Noise impacts are typically minimized when construction activities are performed during daytime hours. However, nighttime construction may be desirable (such as in commercial areas where businesses may be disrupted during daytime hours) or necessary to

avoid major traffic disruption. Coordination with the City or County shall occur before construction can be performed in noise-sensitive areas between 9:00 in the evening and 6:00 in the morning.

- Construction lay-down or staging areas shall be selected in industrially zoned districts. If industrially zoned areas are not available, commercially zoned areas may be used, or locations that are at least 100 feet from any noise-sensitive land use (such as residences, hotels, and motels).

SC-CI-24 The contractor shall be required to adhere to the following administrative noise control measures:

- Once details of the construction activities become available, the contractor shall work with local authorities to develop an acceptable approach to minimize interference with the business and residential communities, traffic disruptions, and the total duration of the construction.
- Good public relations shall be maintained with the community to minimize objections to unavoidable construction impacts. Frequent activity updates of all construction activities shall be provided. A construction noise monitoring program to track sound levels and limit the impacts shall be implemented.
- In case of construction noise complaints by the public, the Resident Engineer shall coordinate with the construction manager, and the specific noise-producing activity may be changed, altered, or temporarily suspended, if necessary.

SC-CI-25 The contractor shall be required to adhere to the following vibration-control measures:

- Restrict the hours of vibration-intensive equipment or activities such as vibratory rollers so that impacts to residents are minimal (e.g., weekdays during daytime hours only when as many residents as possible are away from home.
- The owner of a building close enough to a construction vibration source that damage to that structure due to vibration is possible would be entitled to a pre-construction building inspection to document the pre-construction condition of that structure.
- Conduct vibration monitoring during vibration-intensive activities.

Minimization Measure

CI-17 The contractor shall prepare a Noise and Vibration Monitoring and Mitigation Plan by a qualified Acoustical Engineer and submit it for approval. The plan must outline noise- and vibration-monitoring

procedures at predetermined noise- and vibration-sensitive sites as well as historic properties. The plan also must include calculated noise and vibration levels for various construction phases and mitigation measures that may need to meet the project specifications. The contractor shall not start any construction work or operate any noise-generating construction equipment at the construction site before approval of the plan. The plan must be updated every three months or sooner if there are any changes to the construction activities.

Energy

Standard Conditions

SC-CI-26 The contractor shall identify specific measures that reduce the amount of refuse generated by construction of the proposed project, consistent with the waste reduction requirements established by the California Integrated Waste Management Act of 1989.

Biological Environment

Standard Conditions

SC-CI-27 ***Invasive Species:*** In compliance with the Executive Order on Invasive Species (Executive Order 13112) and subsequent guidance from the Federal Highway Administration, Caltrans shall not use species listed as invasive as part of landscaping erosion control measures. In areas of particular sensitivity, extra precautions shall be taken if invasive species are found in or adjacent to the construction areas. These include the inspection and cleaning of construction equipment and eradication strategies to be implemented should an invasion occur. To adhere to this requirement, any landscape designs shall be submitted to Caltrans for review and approval by a qualified biologist during the project design phase. The review shall verify that no noxious weeds/invasive exotic plant species are in the proposed landscaping plan. If the plan contains noxious weeds/invasive species, the reviewing biologist shall recommend suitable substitutes.

Minimization Measures

CI-18 ***Wetlands and Other Waters:*** Before starting any grading and/or construction-related activity within 50 feet of areas under the jurisdiction of the U.S. Army Corps of Engineers, Regional Water Quality Control Board, and/or California Department of Fish and Wildlife, the contractor shall install fencing, flagging, lath and rope, or another device to delineate the jurisdictional areas that would not be affected by the project. The purpose of the fencing is to protect the jurisdictional areas from inadvertent disturbance. Placement of the fencing shall be done under the supervision of a qualified biological monitor.

CI-19 ***Western Spadefoot, Western Pond Turtle, Coast Horned Lizard, Silvery Legless Lizard:*** A pre-construction survey for western spadefoot, western

pond turtle, coast horned lizard, and silvery legless lizard shall be conducted by a qualified biologist within the proposed impact area before construction. If these species are observed on or adjacent to the impact area and are in imminent danger from construction activities, a qualified biologist shall capture and relocate individuals to an appropriate location outside the impact area. Suitable habitat (such as pools for western spadefoot tadpoles or pond turtles) into which to relocate the individuals will be identified by the biologist and approved by the California Department of Fish and Wildlife before individuals are translocated. The biologist conducting the surveys shall hold necessary permits to handle the species. If animals are not in imminent danger, they shall be allowed to leave the impact area on their own.

CI-20 ***White-tailed Kite:*** A pre-construction survey for nesting raptors shall be done by a qualified biologist within the limits of project disturbance and shall be repeated annually. Any active nest found during survey efforts shall be mapped on the construction plans. If nesting activity is present, the active site shall be protected until nesting activity ends to ensure compliance with Section 3503.5 of the *California Fish and Game Code.*

Nesting activity for raptors in the region normally occurs from February 1 to August 31. If no active nests are found, no further mitigation would be required. Results of the surveys shall be provided to the California Department of Fish and Wildlife.

To protect any white-tailed kite nest site, the following restrictions on construction would be required between February 1 and August 31 (or until nests are no longer active, as determined by a qualified biologist): (1) clearing limits shall be established a minimum of 600 feet in any direction from any occupied nest; (2) access and surveying shall be restricted within 600 feet of any occupied nest; and (3) full-time biological monitoring shall be required when construction is within 600 feet of an active nest. Any encroachment into the buffer area around the known nest shall be allowed only if it is determined by a qualified biologist that the proposed activity shall not disturb the nest occupants. Construction during the non-nesting season can occur only at the sites if a qualified biologist determines that fledglings have left the nest.

CI-21 ***Burrowing Owl****:* A pre-construction survey shall be conducted by a qualified biologist in accordance with the survey requirements detailed in the California Department of Fish and Game's March 7, 2012 *Staff Report on Burrowing Owl* no less than 14 days before initial ground-disturbing activities (California Department of Fish and Game 2012) and shall be repeated annually. Any active burrow found during pre-construction survey efforts shall be mapped and provided to the construction foreman. If no active burrows are found, no further mitigation shall be required.

No disturbance shall occur within buffers around burrows determined to be occupied. Recommended buffer distances are based on time of year and level of disturbance.

Time of Year	Level of Disturbance		
	Low	**Medium**	**High**
April 1 – August 15	656 feet	1,640 feet	1,640 feet
August 16 – October 15	656 feet	656 feet	1,640 feet
October 16 – March 31	164 feet	328 feet	1,640 feet
Source: *Staff Report on Burrowing Owl* (California Department of Fish and Game 2012).			

If owls must be moved away from the disturbance area, passive relocation is preferable to trapping. Relocation shall be implemented only during the non-breeding season by a qualified biologist and would occur in coordination with the California Department of Fish and Wildlife. Owls shall be excluded from burrows in the immediate impact zone by installing one-way doors in burrow entrances. One-way doors shall be left in place for 48 hours to ensure owls have left the burrow before excavation.

An effort shall be made to preserve foraging habitat contiguous with occupied burrow sites for each pair of breeding burrowing owls or for every single unpaired resident bird.

Compensatory mitigation for the San Joaquin kit fox (discussed below) shall also mitigate for the loss of burrowing owl habitat. Additional compensatory mitigation for burrowing owls shall be required only if burrowing owls found within buffer distances specified above during pre-construction surveys cannot be avoided during construction. In this event, potential compensatory mitigation may include purchase of suitable habitat through the payment of fees to the Metropolitan Bakersfield Habitat Conservation Plan Trust Group for this species or construction of artificial burrows in city sumps similar to the City Sump Habitat Program for the San Joaquin kit fox.

CI-22 ***Loggerhead Shrike****:* A qualified biologist shall survey annually within the limits of project disturbance for the presence of any nesting locations. Any active nest found during survey efforts shall be mapped and provided to the construction foreman. If no active nests are found, no further mitigation would be required.

If nesting activity is present, the active site shall be protected until nesting activity has ended to ensure compliance with Section 3503.5 of the California Fish and Game Code. Nesting activity for birds in the region normally occurs from February 1 to August 31. To protect any nest site, the following restrictions on construction are required between February 1 to August 31 (or until nests are no longer active, as determined by a qualified biologist): (1) clearing limits shall be established a minimum of

300 feet in any direction from any occupied nest and (2) access and surveying shall be restricted within 200 feet of any occupied nest. Any encroachment into the 300-/200-foot buffer area around the known nest shall be allowed only if a qualified biologist determines that the proposed activity will not disturb the nest occupants.

CI-23 ***Western Mastiff Bat:*** During construction, when nightwork is required, lighting during the early evening twilight hours (i.e., two hours before sunrise and two hours after sunset) adjacent to open space areas shall be minimized or avoided to the greatest extent possible. Permanent night lighting for the project shall be directed away from natural open space areas.

CI-24 ***Swainson's Hawk****:* Tree removal within 500 feet of non-native grassland, agricultural areas, and detention basins shall occur outside the Swainson's hawk nesting season. An updated focused survey (5 visits) for Swainson's hawk nests shall be conducted during the breeding season before construction activities. A qualified biologist shall survey within the limits of the biological study area and within a 0.5-mile radius around the biological study area for the presence of an active nest in accordance with the Swainson's Hawk Technical Advisory Committee's *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California, Central Valley.* Any active nest found during survey efforts shall be mapped and provided to the construction foreman. If a Swainson's hawk is nesting within 0.5 mile of the proposed impact area, the California Department of Fish and Wildlife shall be consulted to evaluate the potential for disturbance of the nesting birds during construction and to approve measures that would avoid impacts on the active nest; authorization to proceed shall be obtained before work starts. The active site shall be protected until nesting activity has ended to ensure compliance with Section 3503.5 of the California Fish and Game Code and the California Endangered Species Act. If no active nests are found, no further mitigation would be required. Results of the surveys shall be provided to the California Department of Fish and Wildlife.

A pre-construction survey (5 visits from March15 to April 30) shall be conducted annually before construction activities. To protect an active Swainson's hawk nest site, the following restrictions on construction are required between February 1 and August 31 (or until nests are no longer active, as determined by a qualified biologist): (1) clearing limits shall be established a minimum of 600 feet in any direction from any occupied Swainson's hawk nest; (2) access and surveying shall be restricted within 600 feet of any occupied Swainson's hawk nest; and (3) full-time biological monitoring shall be required when construction is within 600 feet of an active nest. Any encroachment into the 600-foot buffer area around the known nest shall be allowed only if the qualified biologist determines that the proposed activity will not disturb the nest occupants.

Mitigation Measures

CI-25 ***San Joaquin Kit Fox:*** The following measures shall be implemented before and during construction:

- Construction activities shall adhere to the standard construction and operational requirements, as described in the U.S. Fish and Wildlife Service's *Standardized Recommendations for Protection of the Endangered San Joaquin Kit Fox Prior to or During Ground Disturbance* (USFWS 2011b).
- No less than 30 but no more than 60 days prior to road construction, a U.S. Fish and Wildlife Service-approved biologist(s) shall conduct pre-construction surveys for San Joaquin kit fox dens both in the project footprint and within 200 feet of the footprint (project footprint plus temporary construction zone), inclusive of any utilities relocations. A letter report and map of known and potential kit fox dens shall be submitted to the U.S. Fish and Wildlife Service prior to the start of ground disturbance and/or construction activities. Repeat clearance surveys shall be conducted no more than 14 days before construction or after any delays in construction of over 2 weeks. Any new known or potential San Joaquin kit fox dens identified in the interim shall be reported to the U.S. Fish and Wildlife Service in a letter report and map. If no new known or potential San Joaquin kit fox dens are identified, an internal record shall be maintained that includes the survey date, the designated biologist conducting the survey, and the general survey findings. The records will be submitted to the U.S. Fish and Wildlife Service upon request.
- Disturbance to all San Joaquin kit fox dens shall be avoided to the maximum extent possible. If known or potential dens are identified within the project footprint during 60-day and/or 14-day pre-construction surveys, Caltrans shall request to monitor and excavate those dens that are expected to be affected directly by the project and cannot be avoided. Active dens shall not be excavated during the natal season (January 1–June 30). The U.S. Fish and Wildlife Service-approved biologist(s) shall monitor potential dens for three consecutive nights using tracking medium and/or a remote sensor camera, shall submit monitoring results in a letter report to the U.S. Fish and Wildlife Service, and also shall oversee the hand excavation of dens that have been determined to be vacant following approval by the U.S. Fish and Wildlife Service. The U.S. Fish and Wildlife Service-approved biologist(s) also shall submit results of the den excavation and exclusion activities in a letter report to the agencies. The following measures shall be applied to dens that are not excavated:
    - Dens that are identified during pre-construction surveys of the project footprint boundary and a 200-foot area outside of the

project footprint shall be monitored and protected by an exclusion zone around dens, as measured outward from the entrance or cluster of entrances of each den. Potential and atypical dens within 50 feet of the project footprint shall be protected with a 50-foot zone delineated by flagged stakes. Known dens within 100 feet of the project footprint shall be protected with a 100-foot zone. To ensure protection, the exclusion zone shall be demarcated by fencing/flagging that does not prevent access to the den by the San Joaquin kit fox. Acceptable designs shall have openings for San Joaquin kit fox ingress/egress but shall keep humans and equipment out, e.g., wooden posts connected with caution tape; orange construction cones; orange construction fencing with a mesh size less than 2 inches in diameter (to prevent the San Joaquin kit fox from becoming entangled in the fencing) with gaps every 50 feet. Fencing/flagging shall be maintained until all construction-related disturbances have been terminated. At that time, all fencing/flagging shall be removed to avoid attracting subsequent attention at the dens.

- If natal/pupping dens are discovered either within the project footprint or within 200 feet of the project footprint, Caltrans shall immediately notify the U.S. Fish and Wildlife Service.

- The U.S. Fish and Wildlife Service-approved biologist(s) shall conduct a worker environmental awareness program for all construction crews prior to ground-disturbing activities, with the purpose of informing all crew members of the potential for the San Joaquin kit fox to occur on site, the effects on the species from construction activities, how to minimize effects to the species, and the penalties for non-exempted take. The training shall be repeated to all new crew members working in San Joaquin kit fox habitat. Crew members shall sign an attendance sheet and confirm that they understand the protection measures and construction restrictions. Training materials and records of attendees shall be submitted to the U.S. Fish and Wildlife Service.
- The U.S. Fish and Wildlife Service-approved biologist(s) shall monitor road construction on a daily basis and shall verify that construction complies with the measures laid out in the Biological Opinion. The U.S. Fish and Wildlife Service-approved biologist(s) shall maintain a log of daily monitoring notes that can be summarized and transmitted to the U.S. Fish and Wildlife Service by request.
- Upon completion of project construction, all areas subject to temporary ground disturbance, including storage and staging areas, shall be restored to original grade and contour. Appropriate methods and plant species used to revegetate shall be determined on a site-specific basis in consultation with revegetation experts.

- To minimize opportunistic predatory effects to the San Joaquin kit fox, the City and Caltrans shall condition contracts with contractors to require that trash be removed at least once daily from project areas and disposed of off site so as not to attract predator species like coyotes (*Canis latrans*) and bobcats (*Lynx rufus*) to the project area.
- The City and Caltrans shall condition contracts with contractors to require that contained water sources, which are inaccessible to the San Joaquin kit fox (e.g., elevated water trucks), be used for dust control and other construction water activities.

3.7 Cumulative Impacts

Regulatory Setting

Cumulative impacts are those that result from past, present, and reasonably foreseeable future actions, combined with the potential impacts of this project. A cumulative effect assessment looks at the collective impacts posed by individual land use plans and projects. Cumulative impacts can result from individually minor, but collectively substantial, impacts taking place over a period of time.

Cumulative impacts to resources in the project area may result from residential, commercial, industrial, and highway development, as well as from agricultural development and the conversion to more intensive types of agricultural cultivation. These land use activities can degrade habitat and species diversity through consequences such as displacement and fragmentation of habitats and populations, alteration of hydrology, contamination, erosion, sedimentation, disruption of migration corridors, changes in water quality, and introduction or promotion of predators. They can also contribute to potential community impacts identified for the project, such as changes in community character, traffic patterns, housing availability, and employment.

California Environmental Quality Act Guidelines Section 15130 describes when a cumulative impact analysis is warranted and what elements are necessary for an adequate discussion of cumulative impacts. The definition of cumulative impacts, under the California Environmental Quality Act, can be found in Section 15355 of the California Environmental Quality Act Guidelines. Briefly, a cumulative impact is when the impact of two or more projects “when considered together, are considerable or which compound or increase other environmental impact.” The definition of cumulative impacts, under the National Environmental Policy Act, which can be found in 40 CFR, Section 1508.7 of the Council on Environmental Quality Regulations, states, a cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Affected Environment

Cumulative impacts identified for the Centennial Corridor are those impacts that result from past, present, and reasonably foreseeable future actions occurring in the metropolitan Bakersfield area, combined with the impacts of building the Centennial Corridor via alignment Alternative A, B, or C. The study area for each of the resources potentially affected by the cumulative projects is defined below. The affected environment for each of these resources has been previously discussed in their respective portions of Chapter 3.

Reasonably Foreseeable Projects

The list of reasonably foreseeable projects is based on known projects identified on the cumulative projects map maintained by the City of Bakersfield. Long-term growth projections are also considered because they help to identify future actions that could contribute to potential cumulative impacts; the project design year (2038) is used as the planning horizon for considering future projects and actions.

Table 3.52 summarizes the reasonably foreseeable projects considered in the cumulative impact analysis of this project. Note that both the Thomas Roads Improvement Program projects and other projects assumed under the Regional Traffic Impact Fee Program are included in the cumulative analysis. The Regional Traffic Impact Fee Program, which requires new development to pay a proportionate share of the cost for new and expanded transportation facilities, includes a range of local street improvements designed to relieve traffic congestion in the study area, which would be built through 2035.

Table 3.52 Cumulative Projects List

Project Name	Description	Status
Bakersfield Commons	A 255-acre project east and west of Coffee Road between Brimhall Road and Rosedale Highway. Allows 1,400,000 square feet of retail commercial, 600,000 square feet of office commercial, 345 multi-family homes, and 80 single-family homes.	Approved in August 2010, but no current construction.
Stockdale Ranch	On the south side of Stockdale Highway near Heath Road. Allows 3,583 residential units and 941,700 square feet of commercial/ business park uses on a 564-acre site.	Approved in June 2010, but no current construction. Two tentative subdivision maps have been submitted to the City.
Saco Ranch Commercial Center	Southeast and southwest of the Coffee Road/7th Standard Road intersection. Allows 1,459,500 square feet of retail commercial, 332,000 square feet of office uses, and 1,376,496 square feet of industrial uses. The center is a 327-acre project.	Approved in August 2010, but no current construction.
Crossroads Plaza Commercial Center	On the west side of Gosford Road between Panama Lane and Harris Road. Allows retail development (138,621 square feet) and a community retail center (605,008 square feet). The Crossroads Plaza project is a 69.84 acre project.	Approved December 2010. No current construction.

Table 3.52 Cumulative Projects List

Project Name	Description	Status
South Mill Creek Retail, Entertainment, and Housing Project	A commercial village of 5.5 acres proposed west of Mill Creek Linear Park in downtown Bakersfield. Creek View Villas (36 condos) and City Place (70-unit apartment), with Mill Creek Courtyard Apartments planned.	14 units of the Creekview Villas have been placed on the market for sale.
Maya Cinemas; Additional Commercial Businesses	16-screen movie theater; 25,000 square feet of retail and commercial space planned in downtown Bakersfield.	Theater complete; remaining commercial enterprises not yet developed.
San Joaquin Community Hospital Avenue	Community hospital to be located at 2620 Chester Avenue, downtown Bakersfield.	The medical office building at 2620 Chester Avenue has been built and is occupied. 60,000-square-foot medical facility at 2700 Chester Avenue is currently under construction.
Regional Traffic Impact Fee Program	Local street improvements throughout the metropolitan Bakersfield area. Improvements would be built as funds are available.	Construction ongoing through 2035.
California High-Speed Rail	The proposed system is composed of nine segments. The first segment proposed for construction would be in the Central Valley from Fresno to Bakersfield.	The final environmental document for the Fresno-Bakersfield segment is being prepared. A contractor for the design-build contract for the initial phase of the project (Merced to Fresno) has been selected. The system from San Francisco to Los Angeles is expected to be constructed by 2029.
State Route 178/ Fairfax Road Interchange	Built an interchange at State Route 178 and Fairfax Road; widened State Route 178.	Project was completed in 2009.
Mohawk Street Extension	Built a six-lane, north-south arterial from Rosedale Highway to Truxtun Avenue with bridges over BNSF Railway, Westside Parkway, and the Kern River, plus a box culvert over the Cross Valley Canal.	Project was completed in 2011.

Table 3.52 Cumulative Projects List

Project Name	Description	Status
State Route 99/ 7th Standard Road	Widened 7th Standard Road, modified the interchange, and built an overpass for 7th Standard Road over the Union Pacific Railroad.	Project was completed in 2010.
North Beltway	Widening 7th Standard Road from 2 to 4 lanes from the Meadows Field Airport to Interstate 5. Includes a new interchange at State Route 99, a grade separation at the Union Pacific Railroad and construction of new bridges over Calloway, Friant-Kern, and Lerdo Canals, and a grade separation at the BNSF Railway near Santa Fe Way. The project is being built in five phases. Only the last phase has not been built—widening from the grade separation at Santa Fe Way to Interstate 5.	Final phase will be built when funding becomes available.
24th Street Project	Project would improve the Oak Street/24th Street intersection and widen 24th and 23rd streets from State Route 99 to M Street. The final environmental document was completed in 2014.	Construction to begin in 2015.
Hageman Flyover Project	Project would provide a roadway across State Route 99 to connect Hageman Road with State Route 204 (Golden State Avenue). The final environmental document to be completed in 2013.	Construction will occur when funding is available.
State Route 178 at Morning Drive Interchange	Project would build a new interchange at State Route 178 and Morning Drive and widen State Route 178 to four lanes for about 1.5 miles. Final design is underway.	Construction began in 2013.
State Route 178 Widening Project	Project would widen State Route 178 to six lanes from Canteria Drive to Masterson Street, and to four lanes from Masterson Street to Miramonte Drive.	Construction to begin in 2014.
State Route 58 (Rosedale Highway) Widening	The project would widen Rosedale Highway to a six-lane facility from Allen Road to State Route 99. The environmental document includes clearance for a grade separation at the railroad crossing near Landco Drive. Final design is underway.	Widening to begin in 2014; grade separation to occur in 2025.
West Beltway	Project would build a six-lane, north-south facility that extends from State Route 119 to 7th Standard Road with 10 potential intersections/ interchanges.	Construction will occur when funding is available.
Westside Parkway (Segment 2 of the Centennial Corridor)	A new east-west freeway extending from Truxtun Avenue on the east to Heath Road on the west. A six-lane freeway would be built from Mohawk Street to Heath Road (about 6.25 miles), with full interchanges at Mohawk Street, Coffee Road, Calloway Drive, and Allen Road.	Construction of the final segment will be completed in 2014.
State Route 58 Gap Closure	The project would widen State Route 58 from 4 to 6 lanes within the median of the freeway between State Route 99 and Cottonwood Street.	Construction began in 2013.

Table 3.52 Cumulative Projects List

Project Name	Description	Status
Kern 99 8-Lane Widening Project	Additional lanes would be built on State Route 99 within the existing right-of-way, which would widen the existing six-lane freeway to eight lanes from the State Route 99 and State Route 204 connector to the Beardsley Canal (post miles 27.0 to 28.4). The project also proposes an auxiliary lane in the northbound direction between the northbound State Route 204 and State Route 99 connector and the northbound Olive Drive interchange.	The project is under construction and is expected to be completed in late 2014.
South Bakersfield 8-Lane Widening Project	The project will widen State Route 99 from State Route 119 to Wilson Road (post miles 17.0 to 22.1) from three to four lanes in each direction. In addition two bridge structures within the project limits, the Pacheco Road Undercrossing and the South Bakersfield Overcrossing that spans the BNSF Railway would be widened.	The project is under construction and is expected to be completed in mid-2014.
Beltway Operational Improvements Project	Project would construct operational improvement features along segments of State Route 99 and State Route 58, including (1) construction of auxiliary lanes, (2) ramp interchange improvements, (3) soundwalls, and (4) retaining walls to accommodate auxiliary lanes and other operational improvements.	Environmental document completed in January 2014.

Environmental Consequences

This section discusses potential impacts to various resources that could occur as a result of the Centennial Corridor project together with the other related projects listed in Table 3.52.

For hazardous materials and waste, the concern would not be from contamination caused by the project, but rather from materials that are currently present in the environment, and hazardous materials transported on the areawide roadway system on a daily basis. Federal, state, and local management and disposal requirements address the handling of these materials. There would be an incremental increase in the generation of hazardous materials in the study area during construction; however, long-term operational impacts of the Centennial Corridor would not contribute to the generation of hazardous materials. The project would serve to remediate (clean up) existing concerns that exist in the corridor. Also, for trucks and other vehicles traveling through Bakersfield carrying hazardous materials, freeways generally have a lower accident rate than surface streets. This would be a cumulative benefit rather than an impact.

The long-range analysis (year 2038) assumptions for the traffic, air quality, and noise (in Sections 3.1.6, 3.2.6, and 3.2.7, respectively) all reflect the growth projections approved by the Kern Council of Governments for 2038. Therefore, from a land use and circulation perspective, the approved long-range growth projections include the cumulative projects identified in Table 3.52. As a result, the project long-range analysis for traffic, air quality and noise also generally reflects the cumulative

projects. An exception is that the project analysis does not assume the California High-Speed Rail project, which has been identified as a cumulative project. From a cumulative perspective, the California High-Speed Rail project could result in cumulative traffic and air quality benefits by providing an alternative mode of transportation. But, it could result in potential cumulative noise impacts, discussed later in this section.

If multiple projects are built during the same general time frame, it would likely result in increased localized construction-related traffic congestion and construction air emissions and noise impacts. The State Route 58 Widening project (Rosedale Highway), widening of 24th Street, and the California High-Speed Rail project are examples of other actions that would occur near the Centennial Corridor and have the potential to contribute to cumulative construction impacts. Construction of both the State Route 58 Widening project (Rosedale Highway) and widening of 24th Street should be completed by the time construction for the Centennial Corridor starts. The City of Bakersfield and Caltrans would work together to ensure overlapping construction from multiple projects in the same vicinity would be managed to avoid or lessen cumulative impacts.

Timing of the California High-Speed Rail project (which would, if and when built, cross State Route 99 between California and Truxtun Avenues next to the existing BNSF Railway railroad tracks) is uncertain at this time. If the High-Speed Rail project were to be in construction at the same time as the Centennial Corridor, there would be cumulative impacts for construction air quality, noise, and traffic. Both projects would generate these types of impacts and, because the construction areas overlap, the surrounding areas would experience the impacts of both projects at the same time.

The analysis concludes that there may be cumulative impacts for several resources:

- Community resources, including land use (such as farmland and parkland), community cohesion, relocation, environmental justice, and growth
- Cultural resources
- Visual resources
- Hydrology and floodplain
- Water quality
- Noise
- Biological resources

Analysis of cumulative impacts for these resources is presented below. The affected environment for each of these resources has been previously discussed in its respective portion of Chapter 3. Analysis focuses on the cumulative impacts of the build alternatives in Segment 1.

Community Resources

Resource Study Area

The Centennial Corridor project is in the metropolitan Bakersfield area, which includes the city of Bakersfield and adjacent unincorporated county land. The effects on community cohesion were considered by looking at specific resources (such as parks and recreational facilities) within half a mile of the project build alternatives.

Current Condition and Historical Context

The city of Bakersfield is one of the fastest growing cities in the nation, but it remains a major agricultural and oil producer. Existing land uses in the metropolitan Bakersfield area include a mix of urban land, outlying agricultural areas, and oil well production areas north of the Kern River. Surrounding the Centennial Corridor are various residential, commercial, industrial, recreational, agricultural, resource/utility, undeveloped/vacant, and government uses.

Bakersfield has been subject to the same stagnation in the economy that has affected the entire state of California, resulting in lower housing values, increasing pressure on monthly rent payments, residential and commercial vacancy rates higher than normal, and lack of widespread employment opportunities. Land development has been steady, until the past few years, when projects have been put on hold, pending an upturn in the local economy. Agricultural land continues to be highly valued.

Project Impacts

Construction of the Centennial Corridor project would result in conversion of existing land uses to transportation uses due to right-of-way acquisitions, resulting in neighborhood disruption, loss of community cohesion, and residential and business displacements. A detailed discussion of land use and community impacts is presented in Sections 3.1.1 and 3.1.2 of this document.

Reasonable Foreseeable Actions

New development in the metropolitan Bakersfield area will lead to changes in land use and an increase in development projects in the area. Planned roadway and infrastructure projects would also change existing land uses as a more developed roadway system is built. Roadway and infrastructure projects that require right-of-way acquisition could also lead to potential demolition and displacement.

Cumulative Impacts

Land Use

Cumulative projects and planned growth in the metropolitan Bakersfield area will lead to changes in land use and an increase in development intensity in the area. With this growth, there would be pressure for urbanized areas to expand to vacant lands and agricultural lands next to existing urban development. Historically, this has happened in the Bakersfield area. But, future development would be managed to be consistent with adopted General Plans, which encourage development in the urbanized portions of the city.

The project, which is one of the planned infrastructure improvements of the approved Regional Transportation Plan, would provide support to the existing and planned developments. Several of the cumulative projects would extend into areas that are or recently have been agricultural areas. In approving these projects, the local jurisdictions have determined that the land use conversion impacts associated with cumulative projects would remain unsubstantial. Construction of the Centennial Corridor improvements would result in the conversion of about 6 acres of land adjacent to the roadway at Stockdale Highway and State Route 43 that are designated as Prime Farmland. But, the project would not cumulatively contribute to considerable cumulative land use impacts.

Parks

A review of cumulative projects indicates that planned projects that are mainly related to transportation would not result in new demand for recreational services, but would instead facilitate access to recreational facilities. Residential land uses and, to a lesser extent, mixed-use projects identified on the cumulative projects list would create additional demand for recreational services. As required by the Quimby Act, future land development projects would be required to provide additional parkland based on the population generated by the project. Implementation of the project would affect some parkland, but mitigation—in the form of replacement park acreage, improved facilities and improvements at new sites—would be provided, resulting in full restoration and potentially expanded facilities. Therefore, the project would not contribute to cumulative effects on parkland.

Growth

The programwide *Thomas Roads Improvement Program Growth Inducement Analysis Report* (2009) documents the results of a growth-related impact analysis of a sample of residential areas in the Bakersfield area. The analysis estimates that Thomas Roads Improvement Program projects would create substantial time savings for commute trips to jobs in the core or across town.

Based only on changes in access to jobs, the growth analysis estimates that Thomas Roads Improvement Program projects would cumulatively increase growth pressures—in northwest Bakersfield to a moderate extent and slightly in west-central Bakersfield. Other areas in Bakersfield are expected to have a relative decrease in growth pressure. Given the existing level of growth pressure due to the ongoing migration of population to Bakersfield and continuing traffic congestion, construction of the proposed Thomas Roads Improvement Program projects is judged unlikely to have a substantial effect on actual residential growth in the area.

Community Character and Cohesion

The right-of-way acquisition for the California High-Speed Rail project would have the potential to affect community cohesion. As with the Centennial Corridor, the California High-Speed Rail project could alter travel patterns of residents due to changes in the local street system. This may disrupt access to nearby facilities and services. However, engineering designs are being developed to keep the local

circulation network intact by building underpasses and overpasses and depressing or elevating facilities.

In the long term, the project would improve the operational efficiency of State Route 58, and it would relieve traffic congestion from area roadways in the resource study area, which would have a positive effect on residents living nearby. The impact from project implementation would be beneficial on a cumulative basis.

Relocation and Property Acquisition

Implementation of any of the build alternatives would result in property acquisitions, ranging from 133 to 356 residential units and between 121 to 198 non-residential properties. Other cumulative projects expected to result in relocations and property acquisition include: (1) the California High-Speed Rail project, which would likely eventually relocate over 200 households and about 280 businesses within the Bakersfield metropolitan area; (2) 24th Street, which would relocate 25 homes; (3) the rail grade-separation portion of the State Route 58 (Rosedale Highway) Widening project, which would relocate 1 home and 14 businesses (the grade-separation is projected to be built in 2025); (4) the West Beltway, which would displace 29 to 72 homes, depending on the alternative selected; and (5) the Hageman Flyover Project, which would displace 1 business.

It is possible that other roadway improvements identified in the Regional Transportation Impact Fee Program may result in a few displacements, but that is unknown at this time because the engineering design for all the projects included in this program has not been completed. None of the projects in the Regional Transportation Impact Fee Program are expected to require a large number of relocations.

Based on current schedules for these projects, only the relocations for Centennial Corridor and the High-Speed Rail project would be expected to occur in the same time period. Relocations for 24th Street would be completed before the start construction of the Centennial Corridor. The relocations associated with Rosedale Highway, Hageman Flyover, and the West Beltway would not occur until several years after the completion of the Centennial Corridor.

Compliance with the California Relocation Assistance Act, the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act, and the City of Bakersfield’s Relocation Assistance Program regarding fair compensation and relocation assistance for displaced individuals and businesses would minimize cumulative impacts as a result of right-of-way acquisition. But, combined, these projects would add to the demand for residential units and business properties in Bakersfield. Construction of new housing stock and business properties is continuing throughout Bakersfield and the surrounding area. The long-range growth forecast identifies substantial growth in the area to provide replacement opportunities. The timing of the property acquisition process for the Centennial Corridor and California High-Speed Rail projects would be important in phasing the impact on replacement housing.

Job losses associated with the business displacement are not expected because most businesses would likely be relocated to an area within the city of Bakersfield.

Right-of-way acquisition required for the Centennial Corridor project would slightly diminish the property tax base of Bakersfield, resulting in minor losses of property tax revenue. Several public projects listed above would also result in the acquisition of private property, further diminishing the local property tax base. Taken altogether, however, this potential cumulative impact would likely be offset by the ongoing and expanding residential, industrial, and commercial property development identified in the cumulative projects list.

Cultural Resources

Resource Study Area

Cultural resource impacts can extend beyond the immediate and direct construction footprint of the specific project and include areas within the Area of Potential Effects, often extending adjacent to and one property beyond and within the viewshed of the project. Therefore, the resource study area includes the overall area from which the build alternatives would be potentially visible.

Current Condition and Historical Context

A number of historic properties in the form of buildings with historic or architectural significance have been identified to be located in the metropolitan Bakersfield area, although an exact number is unknown due to a lack of an area-wide comprehensive local preservation survey meeting Office of Historic Preservation (OHP) standards. As of January 10, 2014, seven properties within Bakersfield were listed on the National Register of Historic Places. Many others have been found to be potentially eligible as part of Section 106, though lacking a formal process the exact number is not known. The City of Bakersfield also has a local Register of Historical Places, which as of January 2014, includes an additional fourteen properties. Another City of Bakersfield historic landmarks designation is made in the category of Locations of Historic Interest for which there are seventeen listings. While development sometimes removes certain historic properties, additional properties are identified and placed on registers as an appreciation for history and architecture expands among the local populace. In addition, there are more buildings that meet the 50 year threshold for consideration as time progresses. Windshield surveys conducted by professional historians and architectural historians have identified a number of local neighborhoods within the Bakersfield city limits that could form potential historic districts, containing both residential and commercial properties, if the neighborhoods wished to do so.

Project Impacts

Changes to existing views would occur under build Alternative A due to the introduction of bridge structures, retaining walls, soundwalls into the Rancho Vista Historic District, as well as splitting the historic district and demolition of more than half of the existing residential properties determined to be eligible for the National Register as district contributors.

Reasonable Foreseeable Actions

New development proposed in the metropolitan Bakersfield area, along with several transportation projects planned throughout the area, may have the further effect of reducing certain historic properties from the existing inventory. However, as the vast majority of historic properties tend to be privately-owned, decisions to maintain those properties with historic and architectural character lie not with government actions, but with the individual.

Cumulative Impacts

Construction activities may cause the loss or impairment of National Register or California Register built environment properties. These include demolition or relocation, as well as increases in vibration and the introduction of new visual elements out of character with the setting of the historic property. Development and other changes induced over time may eliminate or reduce the number of certain types of built environment properties which represent Bakersfield's rich architectural and historical past. However, based on both formal and informal surveys, the inventory of significant properties within the metropolitan Bakersfield area would remain vast.

For cumulative impacts to occur to historic properties, important examples of period architecture property types would have to be permanently removed from the existing inventory of Bakersfield. Neither the Centennial Corridor project, nor the 24th Street Improvement project, which anticipates an adverse effect on one historic property, the South of 24th Street Historic District, with potential relocation or demolition of between 7 and 10 district contributors, would cause the complete removal of any one period architectural style from the entire inventory of residential properties in Bakersfield. The California High-Speed Rail project, if built, is not expected to require demolition of historic properties in metropolitan Bakersfield. Regardless, under Section 106, adverse effects to historic properties are in part mitigated by means of carrying out stipulations as part of Memorandums of Agreement (MOA). Therefore, cumulative impacts related to historic properties is not expected to be substantial.

Visual/Aesthetics

Resource Study Area

Visual impacts can extend beyond the immediate area of the project site and include areas within the viewshed of the project. So, the resource study area includes the overall area from which the build alternatives would be potentially visible.

Current Condition and Historical Context

Landscape in the metropolitan Bakersfield area is characterized by relatively flat topography. The Kern River is an important visual and recreational corridor that runs through the project area and is visible from all build alternatives. The regional landscape, except for the northwestern portion, consists of a mix of residential, commercial, industrial, and recreational land uses.

Existing views are typical of a developed urban setting. Distant mountains, the Kern River, and scattered parks provide visual relief from the urban setting. The nearest naturally elevated features are the Greenhorn Mountains, about 10 miles northeast of the project area. As time goes on, it is likely that the viewshed in metropolitan Bakersfield would become more urbanized.

Project Impacts

Changes to existing views would occur under the build alternatives due to the introduction of bridge structures, bridge supports, retaining walls, soundwalls, signs, lights, ramps, and other accessory structures, demolition of existing residential, commercial, and industrial buildings, and other structures and improvements. Obstruction of views of the Kern River would also occur.

Reasonable Foreseeable Actions

New structures and infrastructure would be introduced by residential and non-residential developments that have been proposed in the metropolitan Bakersfield area, along with several transportation projects throughout the area.

Future development in the metropolitan Bakersfield area would add to the increasing intensity and density of urban development in the project area through the construction of new buildings and infrastructure systems, including roadways.

Cumulative Impacts

Future development would expand the urbanized area, but the metropolitan Bakersfield area would continue to be surrounded by agricultural land or low-density uses in the outlying areas, thereby maintaining a semi-rural character.

For cumulative aesthetic impacts to occur, elements of cumulative projects would need to be close to each other or within the same view. The State Route 58 Widening project (Rosedale Highway) would widen the roadway from four to six lanes. As part of a final phase in the year 2025, a grade separation is proposed over the San Joaquin Valley Railroad line. The State Route 58 Gap Closure project would widen the freeway from Cottonwood Road to State Route 99. Both of these projects would be visible from spots along the Centennial Corridor and would incrementally add to the urbanized nature of the area, but would not change the visual character of the area.

The Westside Parkway project would be incorporated into the Centennial Corridor. Design of Segment 1 of the Centennial Corridor would be done to maintain an aesthetic design theme that is compatible with the Westside Parkway project; to preserve mature trees, as feasible; and to make stormwater management improvements aesthetically pleasing. Therefore, cumulative impacts related to visual and aesthetic resources are not expected to be substantial.

The California High-Speed Rail project, if built, would further add to the urban character of the study area. Design elements and timing for construction of this project are unknown.

When evaluating cumulative aesthetic impacts, it is important to note that the context in which a project is being viewed would also influence the significance of the aesthetic impact. If most of an area becomes or is already urbanized, as is the case with the project area, the contrast with the natural surroundings would be less because the project would not stand out.

So, while the project, when combined with the cumulative projects, would contribute to the ongoing urbanization of the metropolitan Bakersfield area, it is this urban context that would minimize the cumulative visual impact.

Design review of individual projects by the City and County would ensure that the visual quality of proposed structures is consistent with adopted policies and design guidelines. Cumulative impacts would not be significant, and no additional measures would be required.

Hydrology and Floodplain

Resource Study Area

The Centennial Corridor is within the Kern River watershed. The cumulative resource study area is the portion of the Kern River watershed within metropolitan Bakersfield. The Kern River serves as the main drainage channel for the project area. This river flows south through the Sequoia National Forest and enters Lake Isabella. From Lake Isabella, the river flows southwest into the San Joaquin Valley through the city of Bakersfield and empties into the normally dry Kern Lake. Groundwater resources are found within the San Joaquin groundwater basin, which underlies the project area.

Current Condition and Historical Context

The Kern River poses flood hazards to adjacent areas, although levees along the river, bridges, diversion structures, and canals provide flood protection for abutting properties. The natural and beneficial uses of the Kern River and the adjacent floodplain include wildlife foraging, migration, and breeding, flood-flow conveyance and storage, groundwater recharge, and recreational activities, which would be maintained into the foreseeable future.

Project Impacts

Ground disturbance under the build alternatives would change the directional flows and volume of stormwater. The three build alternatives would include bridges over the Kern River, and the bridge columns that would be built in the river would raise the surface water elevation. However, the calculated increase in water surface would be minor, and this encroachment would not be substantial. Impacts on natural and beneficial floodplain values would be minor, and the project would not support incompatible floodplain development.

Reasonable Foreseeable Actions

A number of roadway projects under the Regional Traffic Impact Fee Program would be near the Kern River. Also, the Mohawk Street Extension, the West Beltway, and the 24th Street projects would cross the river, similar to the project.

Cumulative Impacts

Future development within the Kern River watershed would increase impermeable surfaces and decrease water percolation areas. An increase in impervious surfaces would reduce recharge, but since individual development sites are not designated as groundwater recharge areas and existing recharge basins are expected to remain in use, reduction in percolation areas from the project would not have cumulative adverse impacts on groundwater recharge.

The increase in runoff volumes from future development would increase overall stormwater volumes and flow rates in local drainage channels and the Kern River. Under the County/City National Pollutant Discharge Elimination System Permit, new developments must provide onsite improvements (including stormwater infiltration facilities or other stormwater runoff controls) and/or storm drainage system upgrades to prevent the creation of flood hazards at downstream areas. So, no cumulative adverse impacts related to flood hazards or inadequate storm drainage would occur.

Proposed river crossings may increase the surface water elevation of the Kern River. The hydraulic assessment for the project incorporates other proposed bridges into the analysis. The results reveal no adverse impacts to the hydrologic conditions of the Kern River with standard conditions and minimization measures incorporated.

Water Quality and Stormwater Runoff

Resource Study Area

Surface water resources within the Kern Delta hydrologic area include the Kern River and several canals that divert water from the Kern River for use in agricultural irrigation and as municipal water supplies for the surrounding areas. Groundwater resources are within the San Joaquin groundwater basin, which underlies the project area. The resource study area for the analysis of cumulative impacts related to water quality is the metropolitan Bakersfield portion of the lower segment of the Kern River watershed.

Current Condition and Historical Context

The Kern River receives stormwater runoff from developments in the project area through sheet flow and a system of drainage pipes, canals, retention basins, cross culverts, pump stations, and landscaped areas. Surface water quality in the Kern River and other surface water bodies within the Tulare Lake basin are generally good.

Groundwater is the main source of domestic water supplies in the Bakersfield area, with the Kern River water and imported water as supplemental sources. Aside from the river channel, there are recharge ponds along the river, recharge facilities, ground percolation programs, canal seepage, spreading/banking projects, and wastewater reclamation that contribute to local groundwater recharge. Groundwater quality in the Tulare Lake hydrologic region is suitable for most urban and agricultural uses, with some exceptions. No water body in the project area has been identified as “impaired” under Section 303(d) of the Clean Water Act.

Project Impacts

Construction of any build alternative would contribute pollutants to receiving water bodies from uncontrolled runoff and discharges. But, existing and proposed stormwater infiltration basins built as part of the project would minimize impacts to surface water quality of the receiving waters within the watershed.

Reasonable Foreseeable Actions

Private development projects and infrastructure projects planned in the project area would require construction, generate vehicle trips, and involve outdoor operations that may generate stormwater pollutants.

Cumulative Impacts

Future development in the Kern River watershed would generate new sources for urban pollutants, which could affect water quality of surface water and groundwater resources. Construction activities would lead to increases in stormwater runoff and pollutants in the runoff from new impervious areas and a reduction in groundwater recharge. Construction could also result in erosion, which could degrade water quality in receiving waters.

New development would have to comply with existing regulations regarding construction practices that minimize risks of erosion and runoff. Among the various regulations are the applicable provisions of Caltrans Statewide National Pollutant Discharge Elimination System Permit, the Construction General Permit, County and City regulations related to the protection of stormwater quality for new development and significant redevelopment; municipal grading permits, and other National Pollutant Discharge Elimination System permits. This would minimize degradation of water quality at individual project construction sites. Consequently, cumulative impacts would not be considered substantial.

Vehicle use of planned highway/roadway improvement projects would contribute pollutants that could degrade stormwater quality in the Kern Delta hydrologic area. Compliance with applicable State Water Resources Control Board and Regional Water Quality Control Board regulations would ensure that water quality objectives are met and that beneficial uses are maintained. Therefore, direct or indirect impacts associated with water quality from the project would not be considered substantial, and the project would not have a cumulatively considerable contribution to the cumulative effects related to water quality.

Since groundwater impacts associated with the Centennial Corridor project would not be substantial, the project would not have a cumulatively considerable contribution to cumulative effects on groundwater.

Noise

Resource Study Area

The resource study area is the same as the study area evaluated in the *Noise Study Report.* As summarized in Section 3.2.7, Noise, and discussed in the *Noise Technical*

Study, various land uses sit next to the Centennial Corridor project in the study area: single-family and multi-family residences, schools, parks, hotels and motels, churches, and outside dining areas. The analysis evaluated the effects of noise on affected receivers next to the build alternatives.

Current Condition and Historical Context

The project study area is an urban area that includes major roadways, freeways (State Routes 58 and 99) and a rail line. Based on the short-term noise measurements taken in the study area, the existing outdoor equivalent hourly average noise levels in the study area range from 50 to 73 dB, consistent with an urban area. The health effects on the population at the study area would be considered average.

Project Impacts

Each of the build alternatives would result in affected receivers being exposed to traffic noise levels that would approach or exceed the Caltrans Noise Abatement Criteria where abatement would not be provided because it was determined not to be feasible and/or reasonable.

Reasonable Foreseeable Actions

Reasonably foreseeable actions include construction of additional residential uses, which would result in an increase in the number of receptors that may be exposed to traffic noise associated with the Centennial Corridor Project, and generation of additional traffic that would use the Centennial Corridor and other roadway projects identified in Table 3.52, Cumulative Projects List.

A portion of the California High-Speed Rail project would be within the resource study area. Based on current studies, the High-Speed Rail alignment would be between Truxtun and California Avenues on the east side of State Route 99. From west of State Route 99 to Coffee Road, the rail alignment would generally be in the vicinity of the Westside Parkway. Around Coffee Road, the rail alignment would veer northwesterly, away from the Centennial Corridor study area.

Cumulative Impacts

The project long-range analysis (year 2038) reflected the growth projections approved by the Kern Council of Governments. As a result, the 2038 noise analysis of traffic noise reflects the anticipated population growth and traffic that would be associated with cumulative projects. Therefore, except for the California High-Speed Rail project, cumulative noise levels would be the same as those evaluated for the project. The noise impacts associated with the High-Speed Rail project would occur only as the train is passing the affected receivers. As a result, the extent of the impacts would depend on the number and timing of the trips. The High-Speed Rail project also proposed noise abatement to reduce the impacts associated with the rail activity. However, even with abatement, there would still be increased noise levels for those receptors that are exposed to noise levels of both the Centennial Corridor and the California High-Speed Rail project.

Biological Resources

Resource Study Area

The resource study area for biological resources is metropolitan Bakersfield, which is the same area that is under the Metropolitan Bakersfield Habitat Conservation Plan.

Current Condition and Historical Context

Historical development in the metropolitan Bakersfield area has led to the loss of biological resource habitat over time, which has compromised the value of the natural habitat. The project area is highly urbanized and disturbed. Much of the habitat in metropolitan Bakersfield is a mix of native and non-native species. In response to this, the current strategy for maintaining habitat is to secure large contiguous blocks of habitat to support core populations and to serve as corridors between core areas (U.S. Fish and Wildlife Service 1998). The Metropolitan Bakersfield Habitat Conservation Plan was designed to implement this strategy focusing on 11 special-status plant species and seven special-status wildlife species. Mitigation fees paid for each project are used to purchase and maintain habitat reserves.

Project Impacts

The project would have impacts to sensitive plant and animal species and their habitats, including the Swainson's hawk, San Joaquin kit fox, and Ferris' goldfields. The project would also affect riparian habitats and wetlands found in the Kern River and in various canals in the area.

Reasonable Foreseeable Actions

Future development and planned transportation projects would result in permanent and temporary loss of habitat for plant and wildlife species in the area. Additionally, habitat fragmentation can result from the following: development of 1,200 acres of open space; construction and widening of roads for the Thomas Roads Improvement Program projects; and other infrastructure projects, as listed above.

Cumulative Impacts

The disturbance of plant and animal species and loss of habitat that would accompany future development and infrastructure and roadway projects in the metropolitan Bakersfield area would adversely affect sensitive species found in the area. The development of the projects listed in Table 3.52 would require mitigation for the cumulative loss of habitat through payment into the Metropolitan Bakersfield Habitat Conservation Plan of an in-lieu mitigation fee.

The project and cumulative projects could also indirectly affect adjacent habitat during construction or operation. During construction, noise or vibration could affect burrowing animals or nesting raptors. Runoff from the construction sites or operational roadways could affect water quality next to the project sites, which could degrade habitat quality. Night lighting during construction or operation of the projects could interfere with typical foraging or predation of nocturnal species in adjacent open space areas, increasing the potential for some wildlife to avoid these areas.

To avoid or offset potential cumulative effects on biological resources, avoidance, individual projects would implement minimization, and/or mitigation measures. These measures include, but are not limited to, pre-construction biological surveys, biological monitoring, best management practices, construction contract standard provisions, contract non-standard provisions, environmental awareness training, and habitat compensation to mitigate for potential effects to federally and state-listed species.

Implementation of the project and cumulative projects would result in permanent and temporary cumulative impacts on San Joaquin kit fox habitat, including contributing to the regional loss of habitat and fragmentation. Through consultation with the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife, it has been determined that the Thomas Roads Improvement Program projects, which includes the Centennial Corridor Project, would have a cumulative effect on the San Joaquin kit fox. The new roadways could disrupt movement corridors, reducing the probability that kit foxes could safely move from one area of suitable habitat to another in search of denning and foraging habitat. Areas of undeveloped kit fox habitat, which are already highly fragmented in Bakersfield, could be sufficiently degraded by construction of new and expanded roadways and associated infrastructure so that they would no longer function as suitable habitat. Reduced habitat connectivity associated with construction and use of these roadways and infrastructure could force kit foxes to use different areas for movement that could result in greater exposure to potential predators and risk of injury by vehicles.

New development, highway projects, and the Thomas Roads Improvement Program projects could permanently or temporarily affect kit fox dens. Dens within the individual project sites could be destroyed by earth-moving activities during project grading and construction. Dens in the immediate vicinity of roads might be damaged or destroyed by vibration from construction activities. Loss of dens could result in the displacement of kit foxes.

In addition to the project-specific avoidance, minimization, and compensatory mitigation measures described in Section 3.3 of this document, the project would mitigate cumulative effects of the Thomas Roads Improvement Program projects by implementing the Sump Habitat Program, which would provide long-term habitat conservation for the urban kit fox population. On balance, and taking into account mitigation and compensation to be provided for the Thomas Roads Improvement Program, of which the Centennial Corridor is part, there would not be a net adverse cumulative impact on biological resources (see measure CUM-1 below).

Avoidance, Minimization, and/or Mitigation Measures

Avoidance, minimization, and/or mitigation measures identified in each topical section in this document would serve to minimize cumulative impacts to the extent feasible. As each project is evaluated for environmental impacts, project-specific mitigation measures would apply, which would reduce the cumulative impact.

All of the Thomas Roads Improvement Program projects would be providing mitigation for cumulative loss of habitat by payment of the Metropolitan Bakersfield Habitat Conservation Plan in-lieu mitigation fee. Individual projects would also comply with regulations of the California Department of Fish and Wildlife, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, and the Central Valley Regional Water Quality Control Board, as they relate to the preservation and protection of sensitive plant and animal species and their habitats.

In addition, the Sump Habitat Program described below in Mitigation Measure CUM-1 will provide long-term habitat conservation for the urban San Joaquin kit fox population in the metro-Bakersfield area by focusing on sumps (i.e. stormwater drainage basins); sumps in Bakersfield are a functional habitat type for the species and many sumps are either currently known to support San Joaquin kit fox dens or offer potential denning opportunities. The City, in coordination with Caltrans, proposed to utilize the Sump Habitat Program to minimize collective effects to the San Joaquin kit fox engendered by all six Thomas Roads Improvement Program road improvement projects. Conservation measures of the Sump Habitat Program include the installation of artificial dens in selected sumps, the enhancement of San Joaquin kit fox habitat by controlling vegetation in and around dens, the increase of San Joaquin kit fox accessibility to sumps through installation of fence/gate openings (with proposed dimensions of 6 x 6 inches to exclude predators like coyotes and medium- to large-sized dogs), and the reduction in the potential for effects to the species associated with regular maintenance activities and predation. The City provided a letter of commitment to the Service, dated August 10, 2010, fully supporting and providing assurance of the implementation and management of the Sump Habitat Program and its conservation efforts.

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

associated with ongoing implementation; and a Service-approved Long-Term Management Plan. The proposed easement and endowment holder(s) will be Service-approved third-party organizations). Further details in regards to these five core measures can be found in the Draft Sump Habitat Program Plan.

a. The Sump Habitat Program will continue to be updated, refined, and ultimately finalized through an ongoing collaborative consultation process involving Caltrans, the City, Parsons/Thomas Roads Improvement Program, and the Service over the course of the final remaining Thomas Roads Improvement Program project.

b. The finalized Sump Habitat Program will be established and implemented within one year of the approval of the Final Environmental Document for the last of the six Thomas Roads Improvement Program projects; the City will fully fund the Sump Habitat Program within one year of this approval. Caltrans and the City will share responsibility for the Sump Habitat Program; Caltrans will adhere to the proposed avoidance and minimization measures and terms and conditions of this biological opinion and will be responsible for the overall implementation of the Sump Habitat Program, while the City will be responsible for enhancing sumps and conducting long term management of the Sump Habitat Program. A Service-approved third-party will be responsible for administering endowment funds and providing compliance oversight with the terms of the conservation easements for each sump in the Sump Habitat Program.

Chapter 4 California Environmental Quality Act Evaluation

4.1 Determining Significance under the California Environmental Quality Act

The project is subject to federal and state environmental review requirements because Caltrans and the City of Bakersfield propose the use of federal funds and/or the project requires a federal approval action. Project documentation, therefore, has been prepared in compliance with both the California Environmental Quality Act and the National Environmental Policy Act. Caltrans is the project proponent and the lead agency under the California Environmental Quality Act. The Federal Highway Administration's responsibility for environmental review, consultation, and any other action required in accordance with the National Environmental Policy Act and other applicable federal laws for this project is being, or has been, carried out by Caltrans under its assumption of responsibility pursuant to 23 U.S. Code 327.

One of the main differences between the National Environmental Policy Act and the California Environmental Quality Act is the way significance is determined. Under the National Environmental Policy Act, significance is used to determine whether an Environmental Impact Statement, or some lower level of documentation, will be required. The National Environmental Policy Act requires that an Environmental Impact Statement be prepared when the proposed federal action (project) *as a whole* has the potential to "significantly affect the quality of the human environment." The determination of significance is based on context and intensity. Some impacts determined to be significant under the California Environmental Quality Act may not be of sufficient magnitude to be determined significant under the National Environmental Policy Act. Under the National Environmental Policy Act, once a decision is made regarding the need for an Environmental Impact Statement, it is the magnitude of the impact that is evaluated and no judgment of its individual significance is deemed important for the text. The National Environmental Policy Act does not require that a determination of significant impacts be stated in the environmental documents.

The California Environmental Quality Act, on the other hand, does require Caltrans to identify each "significant effect on the environment" resulting from the project and ways to mitigate each significant effect. If the project may have a significant effect on any environmental resource, then an Environmental Impact Report must be prepared. Each and every significant effect on the environment must be disclosed in the Environmental Impact Report and mitigated if feasible. In addition, the California Environmental Quality Act Guidelines list a number of mandatory findings of significance, which also require the preparation of an Environmental Impact Report. There are no types of actions under the National Environmental Policy Act that parallel the findings of mandatory significance of the California Environmental

Quality Act. This chapter discusses the effects of this project and the California Environmental Quality Act significance.

4.2 Discussion of Significant Impacts

With the absence of timberland (forest land), coastal zones, mineral resources, and wild and scenic rivers in or near the project area, the project would have no impacts on these resources. No further discussion of these issues is provided in this chapter. In addition, there would be no transportation/traffic impacts except temporary delays during construction. The project would have beneficial effects on circulation. Transportation/traffic is discussed in Section 3.1.6 of this Environmental Impact Report/Environmental Impact Statement.

Questions on the California Environmental Quality Act environmental checklist (Appendix A, Volume 2) have been addressed based on the discussions in Chapter 3 and below. The discussion below applies to all three build alternatives, unless specifically noted otherwise. As previously discussed in Chapter 3, the environmental baseline for the project is 2008 because that is the year the Notice of Preparation was filed.

4.2.1 Less than Significant Effects of the Project

All three build alternatives have the potential for environmental impacts on resources in the area, as analyzed in Chapter 3 above. However, with standard conditions and minimization measures incorporated, the following impacts would have a less than significant effect on the environment (see Chapter 3 for further information):

Common to All Build Alternatives

- Agriculture (discussed in Section 3.1.3 Farmland)
- Air quality
- Archaeological resources (discussed in Section 3.1.8 Cultural Resources)
- Hydrology and water quality (discussed in Section 3.2.1 Hydrology and Floodplain and Section 3.2.2 Water Quality and Stormwater Runoff)
- Geology and soils (discussed in Section 3.2.3 Geology/Soils/ Seismic/Topography)
- Hazards and hazardous materials (discussed in Section 3.2.5 Hazardous Waste and Materials)
- Population and housing (discussed in 3.1.4 Community Impacts)
- Paleontological resources (discussed in Section 3.2.4 Paleontology)
- Public services, other than parks (discussed in Section 3.1.5 Utilities/Emergency Services)

- Utilities and service systems (discussed in Section 3.1.5 Utilities/Emergency Services)

Alternative B

- Recreation (discussed in Section 3.1.1.3 Parks and Recreation)

Alternatives B and C

In addition to the impact areas identified above, with standard conditions incorporated, Alternatives B and C would have less than significant effects on the following area:

- Historical resources for the purposes of the California Environmental Quality Act

No-Build Alternative

The No-Build Alternative would not lead to any physical changes in the existing environment, in the following areas:

- Aesthetics
- Air quality (construction emissions)
- Agriculture
- Biological resources
- Cultural resources
- Geology and soils
- Hazards and hazardous materials
- Hydrology and water quality
- Land use and planning
- Population and housing
- Public services
- Recreation
- Utilities and service systems

4.2.2 Significant Environmental Effects of the Project

Common to all Build Alternatives

Significant adverse impacts before mitigation measures would occur with the build alternatives in the following resource areas:

- AestheticsBiological resources

Analyses of these topics are provided in Chapter 3. Additional analysis of mobile source air toxics pursuant to the California Environmental Quality Act is also provided.

Mobile Source Air Toxics Contaminants

The following analysis assesses project operational emissions of mobile source air toxics contaminants for comparison with the base year (year 2008). The analysis uses the projected traffic data, including local roadway traffic volumes, vehicle miles traveled, vehicle mix, traffic diversion data, average speed, and the associated changes in mobile source air toxics contaminants for the project alternatives.

Project Setting

The varied existing land uses within the Centennial Corridor study area include low-density residential, commercial, industrial, utilities, and recreational uses. The project area contains several well-established residential neighborhoods and commercial lands mainly situated along Stockdale Highway, California Avenue, and next to State Route 99. Stockdale Highway serves many local retail shops and commercial enterprises, interspersed with small offices providing various community services. Health-related offices, houses of worship, educational facilities, and neighborhood-serving businesses and services are intermingled in residential areas. Multi-family residences, including condominium and apartment complexes, sit throughout the study area.

Land uses along Rosedale Highway (north of the project alignments) are commercial, industrial, open space, public facilities, and residential uses. Residential uses with a mix of commercial uses are mostly west of Calloway Drive. Most land uses include industrial, resource, and commercial land from Calloway Drive to State Route 99. No neighborhoods with an environmental justice population exist along Rosedale Highway within the project vicinity.

Industrial land uses are mostly on the north side of the Kern River. Recreational land uses are spread throughout the study area in the form of neighborhood parks, as noted in Section 2.3. The proposed uses of the Kern River Parkway include primary river channel, natural open space, landscaped areas, existing and proposed recreational areas, access points, parking areas, bridge crossings, and other similar designations. Utilities and transportation facilities are found throughout the study area. Little remaining open space/vacant land exists within the study area. Public facilities are largely concentrated within downtown Bakersfield. The Kern County government is the largest employer within Bakersfield.

Based on demographic data reported by the 2010 U.S. Census, the build alternative alignments pass through 17 census block groups. Thirteen of these 17 census block groups contain a number of minority populations, lower than the city and county averages.

Only four block groups (out of 17) for the Alternatives A and C alignments and three block groups (out of 11) for the Alternative B alignments (see Figures 3-9a through 3-9c in Volume 2) contain minority populations that are higher than the city and county averages. One of these block groups (Census Tract 20 Block Group 3) is also considered a low-income community because the average income of residents is below the federal poverty level.

Table 4.1 shows the number of residences residing within 500 feet of each build alternative alignment delineated by census block groups that pass through the project alignments. See Figures 3-9a through 3-9c for census tract maps.

Table 4.1 Number of Residences Within 500 Feet of Project Alignments

Tract	Block	Alternative A	Alternative B	Alternative C
5.07	1	0	0	0
18.01	1	N/A	N/A	250
18.01	2	N/A	313	N/A
18.01	3	92	372	N/A
18.02	1	330	0	0
18.02	3	75	N/A	N/A
19.01	2	28	28	30
19.01	3	17	17	75
19.02	3	46	46	46
20.00	**3**	116	116	116
26.00	**3**	46	46	46
27.00	1	52	52	52
27.00	4	165	165	165
27.00	**5**	150	150	150
28.12	1	273	271	80
28.12	2	210	210	N/A
28.12	**3**	40	N/A	N/A
28.13	1	95	95	95
Total		1735	1881	1105

N/A: not applicable.
Note: The bold face signifies block groups with an environmental justice population.
Source: Developed from the right-of-way maps 2012

Numerous sensitive receptors to air pollutants, such as schools, hospitals, medical facilities and childcare centers, sit in the vicinity of the proposed alignments as shown in Table 4.2. Note that not all medical facilities listed in Table 4.2 are inpatient facilities and so are not considered a sensitive receptor to air pollutants.

Table 4.2 Schools and Medical Facilities Within Vicinity of Project Alignments

Community Facility	Approximate Distance (feet) from Alternative Alignments		
	Alternative A	**Alternative B**	**Alternative C**
Schools and Daycare			
Van Horn (Wayne) Elementary School	1,000	N/A	N/A
Roosevelt Elementary School	1,200	1,200	1,200
Little Red School House	N/A	0	1,900
Harris (Caroline) Elementary School	N/A	800	1,900
Stockdale Christian School	1,700	1,000	N/A
Sunshine Center	1,100	1,100	1,100
First United Methodist Church/First Experiences Preschool Assembly Manor	700	700	N/A
Millie Munsey Elementary School	1,400	1,400	1,400
Noah's Ark Pre-School	1,400	1,400	1,400
Vista High School	1,800	1,800	1,800
Claude Richardson Child Development Center	900	900	900
Sequoia Middle School	1,700	1,700	1,700
Stine Headstart	800	1,000	N/A
Day Care Center at Central California Economic Development	1,000	1,000	N/A
Child Haven Preschool	500	500	1,000
Caring Corner Day Care Center	300	300	300
Medical Facilities			
Stockdale Podiatry	200	150	N/A
Kaiser Permanente - Stockdale Medical Offices	0	0	550
Brundage Medical Center	550	550	550
Houchin Blood Bank	800	N/A	N/A
DaVita Dialysis	1,980	1,000	1,980
Kern Radiology	N/A	N/A	1,320
Bakersfield Veteran's Affairs Community Clinic	N/A	N/A	1,980
Arthritis Association/Adaptive Aquatic Center	N/A	N/A	1,980
Lifehouse Parkview Healthcare Center	N/A	1,800	930
Truxtun Surgery Center	N/A	N/A	1,000
Healthsouth Bakersfield Rehabilitation Center	N/A	500	1,400
Bakersfield Family Medical	N/A	500	1,900
Kaiser Permanente Medical Care	900	1,400	N/A
First Choice Medical	800	650	1,800
Child and Adolescent Psychology Center	600	N/A	N/A

Note: Facilities sitting beyond 2,000 feet of the build alternatives are listed as not applicable (N/A). Facilities directly affected by a build alternative are identified with the number 0.

Source: *Community Impact Assessment* 2013

Results of Mobile Source Air Toxics Analysis

Please refer to the Mobile Source Air Toxics analysis in the Air Quality Section 3.2.6. Based on the mobile source air toxics emission calculation results, no significant impact from mobile source air toxics is expected to occur based on comparison of mobile source air toxics emissions of project alternatives with the existing condition (2008) as the baseline for the California Environmental Quality Act.

As far as the health effect of mobile source air toxics is concerned, there are 1,735 (Alternative A), 1,881 (Alternative B), and 1,105 (Alternative C) residences within 500 feet of the build alignments (see Table 4.1). There are also numerous sensitive receptors such as schools, hospitals, and childcare centers near the proposed alignments (see Table 4.2). These residences and sensitive receptors would be exposed to the mobile source air toxics as a result of the existing and proposed new roadway operations.

Research into the health impacts of mobile source air toxics is ongoing. For different emission types, various studies show that some are associated with adverse health outcomes through epidemiological studies (frequently based on emissions levels found in occupational settings); others indicate that animals demonstrate adverse health outcomes when exposed to large doses.

Other studies have addressed mobile source air toxics health impacts on humans in proximity to roadways. The Health Effects Institute, which is a nonprofit organization funded by U.S. Environmental Protection Agency, Federal Highway Administration, and the automotive industry, has undertaken a major series of studies to research near-roadway mobile source air toxics hot spots, the health implications of the entire mix of mobile source pollutants, and other topics. The final summary of the series is not expected for several years.

Alternative A

In addition to the impact areas identified above, Alternative A would have significant adverse impacts before incorporation of mitigation measures in the following areas:

- Historical Resources for the purposes of the California Environmental Quality Act
- Public Services – Parks—Kern River Parkway

Alternative B

Alternative B would not have any significant impacts beyond those listed under the Common to All Build Alternatives heading above.

Alternative C

In addition to the impact areas identified above, Alternative C would have significant adverse impacts before incorporation of mitigation measures in the following area:

- Public Services – Parks—Saunders Park

No-Build Alternative

The following would have a significant impact with the No-Build Alternative:

- Transportation/Traffic
- Air Quality (plan consistency)
- Noise

4.2.3 Unavoidable Significant Environmental Effects

Measures have been proposed to mitigate the potentially significant adverse impacts of the build alternatives. However, the following impacts would remain significant and unavoidable.

- Aesthetics (Visual) (Alternatives A and B)
- Land Use and Planning (Consistency with Planning Programs—all alternatives)
- Community Impacts—Alternatives A and B
- Noise (all alternatives)

These are discussed below.

Common to All Build Alternatives

Land Use and Planning

As discussed in Section 3.1.1.2, none of the build alternatives would be able to fully meet all the goals outlined in the *Metropolitan Bakersfield General Plan*. The remaining inconsistencies pertain to minimizing impacts from truck traffic on noise-sensitive uses; retaining existing residential neighborhoods and allowing in-fill development that is compatible with the character of the surrounding neighborhood; and protecting access to the Kern River (this last point only applies to Alternative A). The project has been designed to minimize these inconsistencies with local plans and programs to the extent feasible. However, these impacts cannot be fully reduced to less than significant.

Noise

All the build alternatives would have sensitive noise receptors that would be exposed to traffic noise increases in excess of 12 dB even after abatement measures. The noise analysis in accordance with the California Environmental Quality Act is presented below.

California Environmental Quality Act Noise Analysis

When determining whether a noise impact is significant under the California Environmental Quality Act, a comparison is made between the existing noise level (baseline) and the build alternative noise levels. The California Environmental Quality Act noise analysis is independent of the National Environmental Policy Act analysis, which is centered on noise abatement criteria. Under the California Environmental Quality Act, the assessment looks at the setting of the noise impact

and then how large or perceptible any noise increase would be in the given area. The following are key considerations: uniqueness of the setting, sensitive nature of the noise receptor(s), magnitude of the noise increase, number of residences affected, and project noise level.

If a proposed project is determined to have a significant 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.

It is generally accepted that people are able to begin to detect sound level increases of 3 dB in typical noisy environments, and that a 5-decibel increase is perceived as a distinctly noticeable increase. A 10-decibel increase is generally perceived as a doubling of loudness. Therefore, a doubling of sound energy, such as doubling the volume of traffic on a highway that would result in a 3-decibel increase in sound would generally be perceived as barely detectable.

Frequent outdoor use areas of residences and other noise-sensitive areas affected by the project can be divided into two distinct groups. The first group is receivers that are located along State Route 58, along State Route 99 south of State Route 58, and along the east side of State Route 99 north of State Route 58; these receivers are presently exposed to traffic noise from a freeway. The second group consists of frequent outdoor use areas that are not presently exposed to freeway traffic noise, but are located along proposed Alternatives A and B west of State Route 99, as well as receivers along the west side of Alternative C north of State Route 58.

A two-tier impact criterion for traffic noise significance analysis is used for the California Environmental Quality Act. A 5-decibel increase from existing noise levels is considered an impact for areas presently exposed to the freeway traffic noise; a 12-decibel increase is used for areas that presently are not exposed to the freeway traffic noise. This allows less noise increase for areas that are along the existing freeway because the areas are already exposed to high traffic noise levels. The reasoning for this two-tier approach is that people already exposed to high levels of noise should be expected to tolerate a small increase in the amount of noise in their community. In contrast, if the existing noise levels are quite low, it is reasonable to allow a greater change in the community noise for the equivalent difference in annoyance. Typically, a 5-decibel noise increase in a noisy environment is more annoying and intruding than a similar noise increase in a quieter environment.

Because a decibel, which is used to report noise levels, is a logarithm, the required energy to increase 1 decibel is much less when the noise level is 50 dBA versus when it is 70 dBA. An increase of 5 dB from 67 to 72 dBA requires approximately 4.5 times more energy than required to increase 52 dBA by 12 dB to 64 dBA. Therefore, an increase of 12 dB at a lower noise level will not cause more energy exposure than an increase of 5 dB at a higher noise level. The higher increase for areas that presently have low background noise levels would bring their noise levels about the same as the areas along the existing freeways.

A project is considered to have a significant noise impact when it causes an adopted noise standard to be exceeded at a sensitive receptor and when it substantially increases noise exposure.

At noise receiver locations, the existing baseline traffic noise level was compared to the future build traffic noise level for each of the build alternatives. Feasible traffic noise abatement was considered at locations where a significant noise impact was identified. Because of the constrained configuration and suburban location of the project, construction of noise barriers was considered the only practical traffic noise abatement measure. For the purposes of the California Environmental Quality Act, Caltrans considers the reasonableness and feasibility of noise abatement the same as previously discussed in Section 3.2.7, Noise, and as determined in the *Noise Abatement Decision Report.*

Land uses along the alignment of the project consist of single- and multi-family residences, commercial and light industrial establishments, hotels and motels, office buildings, parks, churches, mobile homes, recreational outdoor use areas, and schools and daycare centers. Most of the frequent outdoor use areas consist of residential areas. Soundwalls would serve as abatement to bring down the noise levels along several segments of the freeway, but some areas would continue to experience noise increases of 5 or 12 dB or more. Noise impacts at these locations would remain significant and unavoidable.

Alternative A

There are 157 frequent outdoor use areas west of State Route 99 that would have more than a 12-decibel noise increase and 27 frequent outdoor use areas along State Route 58 and State Route 99 that would have more than a 5-decibel noise increase. Alternative A proposes 23 soundwalls to cover the entire study area, but only 19 meet the feasibility and reasonableness criteria. Refer to Section 3.2.7, Noise, for details. Future predicted traffic noise levels with the recommended abatement measures would range from 56 to 74 dBA. There would be 13 affected frequent outdoor use areas for which noise abatement is not recommended, and 171 frequent outdoor use areas would still be affected even with the recommended soundwalls.

Tables 4.3 through 4.5 show the change in traffic noise levels at each receiver location and indicate whether an impact is a significant impact.

Table 4.3 Traffic Noise Impact Analysis – Alternative A (West of State Route 99)

Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative A (dBA)	Recommended Soundwall	Future Conditions with Alternative A minus Existing Conditions (2011)	Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level	Impact
RA-6	52	52	71	S474	19	6	13	Significant/Unavoidable
RA-7	52	52	69	S474	17	6	11	Less than Significant
RA-8	52	52	66	S474	14	5	9	Less than Significant
RA-9	52	52	63	S474	11	4	7	Less than Significant
RA-10	52	52	62	S474	10	3	7	Less than Significant
RA-11	52	52	64	S474	12	5	7	Less than Significant
RA-12	52	52	72	S474	20	10	10	Less than Significant
RA-12A	52	52	72	S474	20	8	12	Significant/Unavoidable
RA-13	52	52	71	S474	19	5	14	Significant/Unavoidable
RA-13A	52	52	74	S474	22	8	14	Significant/Unavoidable
RA-14	52	52	73	S474	21	8	13	Significant/Unavoidable
RA-15	52	52	69	S474	17	8	9	Less than Significant
RA-16	52	52	68	S474	16	7	9	Less than Significant
RA-17	52	52	71	S474	19	8	11	Less than Significant
RA-18	52	52	69	S474	17	7	10	Less than Significant
RA-18A	52	52	73	S474	21	7	14	Significant/Unavoidable
RA-19	52	52	66	S474	14	5	9	Less than Significant
RA-20	52	52	69	S474	17	6	11	Less than Significant
RA-21	52	52	69	S474	17	6	11	Less than Significant
RA-22	50	50	67	S474	17	5	12	Significant/Unavoidable
RA-23	50	50	68	S474	18	5	13	Significant/Unavoidable
RA-24	50	50	65	S474	15	6	9	Less than Significant
RA-25	50	50	62	S474	12	5	7	Less than Significant
RA-26	50	50	61	S474	11	4	7	Less than Significant
RA-27	50	50	62	S474	12	1	11	Less than Significant
RA-28	54	54	66	S499	12	5	7	Less than Significant
RA-29	54	54	70	S499	16	8	8	Less than Significant
RA-30	54	54	67	S499	13	7	6	Less than Significant
RA-31	54	54	69	S499	15	5	10	Less than Significant
RA-32	54	54	67	S499	13	7	6	Less than Significant
RA-33	54	54	65	S499	11	5	6	Less than Significant
RA-34	54	54	63	S499	9	6	3	Less than Significant
RA-35	54	54	62	S499	8	6	2	Less than Significant
RA-36	52	52	72	S499	20	8	12	Significant/Unavoidable
RA-37	52	52	68	S499	16	7	9	Less than Significant
RA-38	52	52	69	S499	17	7	10	Less than Significant
RA-39	52	52	68	S499	16	6	10	Less than Significant
RA-41	63	63	70	S531	7	5	2	Less than Significant
RA-42	63	63	71	S531	8	6	2	Less than Significant
RA-43	63	63	70	S531	7	6	1	Less than Significant
RA-44	59	59	70	S531	11	7	4	Less than Significant

Table 4.3 Traffic Noise Impact Analysis – Alternative A (West of State Route 99)

Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative A (dBA)	Recommended Soundwall	Future Conditions with Alternative A minus Existing Conditions (2011)	Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level	Impact
RA-45	59	59	69	S531	10	6	4	Less than Significant
RA-46	63	63	69	S531	6	6	0	Less than Significant
RA-47	63	63	69	S531	6	6	0	Less than Significant
RA-49	63	63	70	S531	7	5	2	Less than Significant
RA-50	53	53	66	S526	13	5	8	Less than Significant
RA-51	53	53	68	S526	15	6	9	Less than Significant
RA-53	53	53	59	S526	6	3	3	Less than Significant
RA-54	53	53	69	S526	16	7	9	Less than Significant
RA-55	53	53	64	S526	11	5	6	Less than Significant
RA-56	53	53	62	S526	9	4	5	Less than Significant
RA-57	53	53	69	S526	16	6	10	Less than Significant
RA-58	53	53	68	S526	15	5	10	Less than Significant
RA-59	53	53	68	S526	15	5	10	Less than Significant
RA-60	56	56	69	S526	13	6	7	Less than Significant
RA-61	56	56	69	S526	13	6	7	Less than Significant
RA-62	56	56	69	S526	13	6	7	Less than Significant
RA-64	56	56	67	S526	11	5	6	Less than Significant
RA-65	52	52	70	S526	18	6	12	Significant/Unavoidable
RA-66	52	52	70	S526	18	6	12	Significant/Unavoidable
RA-67	52	52	69	S526	17	6	11	Less than Significant
RA-69	52	52	69	S526	17	5	12	Significant/Unavoidable
RA-70	52	52	69	S526	17	5	12	Significant/Unavoidable
RA-71	52	52	71	S526	19	5	14	Significant/Unavoidable
RA-72	52	52	72	S526	20	5	15	Significant/Unavoidable
RA-74	52	52	72	S526	20	6	14	Significant/Unavoidable
RA-75	52	52	72	S526	20	6	14	Significant/Unavoidable
RA-76	52	52	68	S526	16	5	11	Less than Significant
RA-77	52	52	64	S526	12	3	9	Less than Significant

dBA: A-weighted decibels

Note:
1 - Receivers that are noise measurement sites which are not located at an outdoor use area, or those subject to acquisitions, are not listed in this table because they do not represent a future outdoor use area and do not qualify for noise abatement.

Source: Developed from the *Noise Study Report* 2013.

Table 4.4 Traffic Noise Impact Analysis – Alternative A (State Route 99 South of State Route 58)

Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative A (dBA)	Recommended Soundwall	Future Conditions with Alternative A minus Existing Conditions (2011)	Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level	Impact
R99-11	60	63	67	--	7	0	7	Significant/Unavoidable
R99-12	70	73	74	--	4	0	4	Less than Significant
R99-13	68	71	74	--	6	0	6	Significant/Unavoidable
R99-14	69	72	73	SW3	4	2	2	Less than Significant
R99-15	62	65	68	SW3	6	0	6	Significant/Unavoidable
R99-20	56	59	59	SW2	3	0	3	Less than Significant
R99-20A	62	65	65	SW2	3	0	3	Less than Significant
R99-21	58	61	62	SW2	4	0	4	Less than Significant
R99-21A	61	64	67	SW2	6	0	6	Significant/Unavoidable
R99-21B	65	68	69	SW2	4	0	4	Less than Significant
R99-21C	61	64	65	SW2	4	0	4	Less than Significant
R99-22	60	63	65	SW2	5	0	5	Significant/Unavoidable
R99-23	62	65	72	--	10	5	5	Significant/Unavoidable
R99-25	64	67	74	--	10	5	5	Significant/Unavoidable
R99-26	61	66	68	SW5	7	0	7	Significant/Unavoidable
R99-27	60	65	68	SW5	8	0	8	Significant/Unavoidable
R99-28	61	66	66	SW5	5	0	5	Significant/Unavoidable
R99-29	56	61	61	SW5	5	0	5	Significant/Unavoidable
R99-30	57	62	62	S676	5	0	5	Significant/Unavoidable
R99-31	68	73	73	S676	5	8	-3	Less than Significant
R99-32	68	73	71	S676	3	6	-3	Less than Significant
R99-33	70	75	75	S676	5	11	-6	Less than Significant
R99-34	62	67	67	S676	5	5	0	Less than Significant
R99-36	64	69	70	S676	6	6	0	Less than Significant
R99-37	68	73	74	S676	6	9	-3	Less than Significant
R99-40	59	63	71	--	12	0	12	Significant/Unavoidable
R99-41	58	62	70	--	12	0	12	Significant/Unavoidable
R99-43	60	64	72	--	12	0	12	Significant/Unavoidable
R99-43A	57	61	67	--	10	0	10	Significant/Unavoidable

dBA: A-weighted decibels

Note:
1 - Receivers that are noise measurement sites which are not located at an outdoor use area, or those subject to acquisitions, are not listed in this table because they do not represent a future outdoor use area and do not qualify for noise abatement.

Source: Developed from the *Noise Study Report* 2013.

Table 4.5 Traffic Noise Impact Analysis – Alternative A (State Route 58)

Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative A (dBA)	Recommended Soundwall	Future Conditions with Alternative A minus Existing Conditions (2011)	Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level	Impact
R58-43	62	65	66	--	4	0	4	Less than Significant
R58-44	62	65	67	--	5	0	5	Significant/Unavoidable
R58-69	62	65	68	--	6	0	6	Significant/Unavoidable

dBA: A-weighted decibels

Note:
1 - Receivers that are noise measurement sites which are not located at an outdoor use area, or those subject to acquisitions, are not listed in this table because they do not represent a future outdoor use area and do not qualify for noise abatement.

Source: Developed from the *Noise Study Report* 2013.

Alternative B

There are 49 frequent outdoor use areas west of State Route 99 that would have more than a 12-decibel noise increase and 21 frequent outdoor use areas along State Route 58 and State Route 99 that would have more than a 5-decibel noise increase. Alternative B proposes 28 soundwalls to cover the entire study area, but only 24 meet the feasibility and reasonableness criteria; one that was not reasonable was recommended for gap closure. Refer to Section 3.2.7, Noise, for details.

Future predicted traffic noise levels with the recommended abatement measures would range from 54 to 75 dBA. There would be 11 affected frequent outdoor use areas for which noise abatement is not recommended, and 58 frequent outdoor use areas would still be affected even with the recommended soundwalls.

Tables 4.6 through 4.8 show the change in traffic noise levels at each receiver location and whether an impact is a significant impact.

Table 4.6 Traffic Noise Impact Analysis – Alternative B (West of State Route 99)

Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative B (dBA)	Recommended Soundwall	Future Conditions with Alternative B minus Existing Conditions (2011)	Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level	Impact
RB-5	58	58	75	S518	17	8	9	Less than Significant
RB-6	58	58	63	S518	5	4	1	Less than Significant
RB-7	53	53	66	S518	13	6	7	Less than Significant
RB-8	53	53	74	S518	21	7	14	Significant/Unavoidable

Table 4.6 Traffic Noise Impact Analysis – Alternative B (West of State Route 99)

Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative B (dBA)	Recommended Soundwall	Future Conditions with Alternative B minus Existing Conditions (2011)	Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level	Impact
RB-9	53	53	62	S518	9	4	5	Less than Significant
RB-10	53	53	68	S518	15	7	8	Less than Significant
RB-11	53	53	75	S518	22	9	13	Significant/Unavoidable
RB-12	53	53	63	S518	10	6	4	Less than Significant
RB-13	53	53	60	S518	7	3	4	Less than Significant
RB-14	53	53	61	S518	8	3	5	Less than Significant
RB-15	53	53	66	S518	13	5	8	Less than Significant
RB-16	53	53	68	S518	15	4	11	Less than Significant
RB-17	53	53	63	S518	10	2	8	Less than Significant
RB-18	53	53	60	S518	7	2	5	Less than Significant
RB-19	51	51	65	S530	14	5	9	Less than Significant
RB-19A	53	53	65	S530	12	5	7	Less than Significant
RB-20	51	51	65	S530	14	7	7	Less than Significant
RB-21	51	51	62	S536 & S544	11	3	8	Less than Significant
RB-22	51	51	65	S536 & S544	14	5	9	Less than Significant
RB-23	51	51	72	S536 & S544	21	8	13	Significant/Unavoidable
RB-24	51	51	76	S536 & S544	25	10	15	Significant/Unavoidable
RB-26	51	51	77	S536 & S544	26	12	14	Significant/Unavoidable
RB-27	51	51	73	S536 & S544	22	7	15	Significant/Unavoidable
RB-28	51	51	75	S536 & S544	24	8	16	Significant/Unavoidable
RB-30	51	51	68	S536 & S544	17	5	12	Significant/Unavoidable
RB-31	51	51	70	S536 & S544	19	5	14	Significant/Unavoidable
RB-32	51	51	72	S536 & S544	21	7	14	Significant/Unavoidable
RB-34	67	67	67	--	0	0	0	Less than Significant
RB-35	69	69	70	--	1	0	1	Less than Significant
RB-36	52	52	66	S509 & S519	14	7	7	Less than Significant
RB-37	52	52	64	S509 & S519	12	5	7	Less than Significant
RB-38	52	52	58	S509 & S519	6	1	5	Less than Significant
RB-39	52	52	74	S509 & S519	22	11	11	Less than Significant
RB-39A	52	52	76	S509 & S519	24	11	13	Significant/Unavoidable
RB-40	52	52	68	S509 & S519	16	8	8	Less than Significant
RB-41	52	52	64	S509 & S519	12	5	7	Less than Significant
RB-42	52	52	72	S509 & S519	20	8	12	Significant/Unavoidable
RB-43	52	52	61	S509 & S519	9	1	8	Less than Significant
RB-44	52	52	70	S509 & S519	18	5	13	Significant/Unavoidable
RB-45	53	53	63	S529	10	1	9	Less than Significant
RB-46	53	53	67	S529	14	1	13	Significant/Unavoidable
RB-47	53	53	61	S529	8	1	7	Less than Significant
RB-48	51	51	62	S529	11	1	10	Less than Significant
RB-49	51	51	69	S529	18	5	13	Significant/Unavoidable
RB-50	51	51	66	S529	15	5	10	Less than Significant
RB-51	51	51	62	S529	11	3	8	Less than Significant

Table 4.6 Traffic Noise Impact Analysis – Alternative B (West of State Route 99)

Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative B (dBA)	Recommended Soundwall	Future Conditions with Alternative B minus Existing Conditions (2011)	Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level	Impact
RB-52	51	51	62	S537 & S555	11	3	8	Less than Significant
RB-53	51	51	69	S537 & S555	18	6	12	Significant/Unavoidable
RB-54	51	51	76	S537 & S555	25	9	16	Significant/Unavoidable
RB-55	51	51	70	S555	19	7	12	Significant/Unavoidable
RB-57	51	51	67	S555	16	5	11	Less than Significant
RB-58	51	51	58	S555	7	4	3	Less than Significant
RB-59	51	51	71	S555	20	7	13	Significant/Unavoidable
RB-59A	51	51	74	S555	23	8	15	Significant/Unavoidable
RB-60	51	51	69	S555	18	7	11	Less than Significant
RB-61	62	62	66	S555	4	6	-2	Less than Significant
RB-62	62	62	62	S555	0	3	-3	Less than Significant
RB-63	62	62	64	S555	2	1	1	Less than Significant
RB-64	62	62	72	S555	10	8	2	Less than Significant
RB-65	62	62	71	S555	9	3	6	Less than Significant
RB-66	63	63	65	S555	2	1	1	Less than Significant
RB-67	63	63	66	S555	3	1	2	Less than Significant
RB-68	59	59	67	S555	8	3	5	Less than Significant
RB-69	63	63	70	S555	7	4	3	Less than Significant
RB-70	63	63	68	S555	5	5	0	Less than Significant
RB-71	63	63	67	S555	4	5	-1	Less than Significant
RB-73	63	63	69	S555	6	7	-1	Less than Significant
RB-74	63	63	66	S555	3	6	-3	Less than Significant
RB-75	52	52	65	S555	13	6	7	Less than Significant
RB-76	52	52	66	S555	14	6	8	Less than Significant
RB-77	52	52	65	S555	13	5	8	Less than Significant
RB-79	52	52	65	S555	13	5	8	Less than Significant
RB-80	52	52	65	S555	13	5	8	Less than Significant
RB-81	52	52	70	S555	18	5	13	Significant/Unavoidable
RB-82	52	52	71	S555	19	6	13	Significant/Unavoidable
RB-84	52	52	71	S555	19	5	14	Significant/Unavoidable
RB-85	52	52	72	S555	20	7	13	Significant/Unavoidable
RB-86	52	52	70	S555	18	8	10	Less than Significant
RB-87	52	52	66	S555	14	5	9	Less than Significant

dBA: A-weighted decibels

Note:
1 - Receivers that are noise measurement sites which are not located at an outdoor use area, or those subject to acquisitions, are not listed in this table because they do not represent a future outdoor use area and do not qualify for noise abatement.

Source: *Noise Study Report,* 2013.

Table 4.7 Traffic Noise Impact Analysis – Alternative B (State Route 99 South of State Route 58)

Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative B (dBA)	Recommended Soundwall	Future Conditions with Alternative B minus Existing Conditions (2011)	Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level	Impact
R99 11	60	63	67	--	7	0	7	Significant/Unavoidable
R99 12	70	73	74	--	4	0	4	Less than Significant
R99 13	68	71	74	--	6	0	6	Significant/Unavoidable
R99 14	69	72	73	--	4	2	2	Less than Significant
R99 15	62	65	69	--	7	0	7	Significant/Unavoidable
R99 23	62	65	72	--	10	5	5	Significant/Unavoidable
R99 25	64	67	75	--	11	5	6	Significant/Unavoidable
R99 26	61	66	69	--	8	1	7	Significant/Unavoidable
R99 27	60	65	68	--	8	0	8	Significant/Unavoidable
R99 28	61	66	66	--	5	0	5	Significant/Unavoidable
R99 29	56	61	61	--	5	0	5	Significant/Unavoidable
R99 40	59	63	72	--	13	0	13	Significant/Unavoidable
R99 41	58	62	73	--	15	0	15	Significant/Unavoidable
R99 43C	58	62	75	--	17	0	17	Significant/Unavoidable
R99 43A	57	61	70	--	13	0	13	Significant/Unavoidable

dBA: A-weighted decibels

Note:
1 - Receivers that are noise measurement sites which are not located at an outdoor use area, or those subject to acquisitions, are not listed in this table because they do not represent a future outdoor use area and do not qualify for noise abatement.

Source: Developed from the *Noise Study Report* 2013.

Table 4.8 Traffic Noise Impact Analysis – Alternative B (State Route 58)

Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative A (dBA)	Recommended Soundwall	Future Conditions with Alternative B minus Existing Conditions (2011)	Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level	Impact
R58-43	62	65	66	--	4	0	4	Less than Significant
R58-44	62	65	67	--	5	0	5	Significant/Unavoidable
R58-69	62	65	68	--	6	0	6	Significant/Unavoidable

dBA: A-weighted decibels

Note:
1 - Receivers that are noise measurement sites which are not located at an outdoor use area, or those subject to acquisitions, are not listed in this table because they do not represent a future outdoor use area and do not qualify for noise abatement.

Source: Developed from the *Noise Study Report,* 2013.

According to Caltrans procedures, traffic noise impact analysis and recommending noise abatement measures must be based on the highest traffic noise that a roadway can generate. Normally, the highest traffic noise is generated when traffic speed is at the posted speed and traffic volume is at the capacity. This situation is referred to as level of service C.

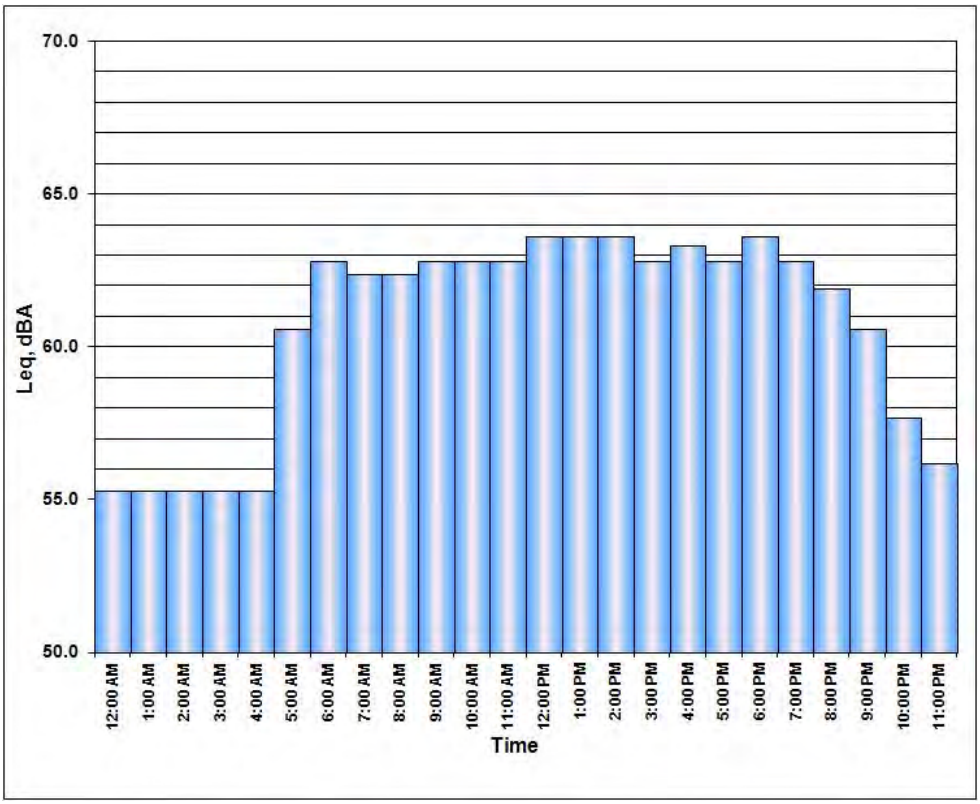
The future predicted highest traffic noise levels from the freeway would range between 61 and 67 dBA (similar to heavy traffic at 300 feet–see Figure 3-33–Noise Levels of Common Activities). These levels are based on a total hourly traffic volume of 11,800, but the highest forecasted total hourly traffic volume for year 2038 is less than 6,000. This means that, by year 2038, the freeway would not be producing the highest traffic noise levels yet. But, noise abatement measures must be designed for the worst possible future traffic noise levels.

Results of the worst-case traffic noise impact analysis indicated that there would be traffic noise impacts at Centennial Park because there would be up to 14-decibel noise increases in the future compared to existing noise levels. The *Noise Study Report* had concluded that a soundwall would not provide feasible abatement to the Centennial Park and nearby residences; therefore, no further evaluation was needed. However, during the environmental process it was decided to add Soundwall S529 for gap closure purposes. The existing peak noise level at the park is 53 dBA (quiet urban daytime–see Figure 3-33–Noise Levels of Common Activities). But, for Centennial Park, hourly traffic noise levels were calculated using forecasted traffic distribution of a typical day in 2038.

Figure 4-1 shows the results of the calculations. Results indicated that traffic noise levels in Centennial Park would be within a 1-decibel range for the daylight hours (7 a.m. to 7 p.m.) when the park is in use. Traffic noise levels would drop during late night and early morning hours, but the park is not used during those hours.

The predicted hourly traffic noise levels for 2038 during the daylight hours with the existing hourly noise levels measured at a nearby long-term noise measurement site (LT7) indicate that future noise levels would be higher than existing noise levels by 9 to 12 dB. The highest differential may increase by 2 to 3 dB once traffic reaches level of service C conditions in the future.

Figure 4.1: Hourly Traffic Noise Levels at Centennial Park in 2038



Source: Section 4(f) Evaluation 2014.

Alternative C

There are no frequent outdoor use areas west of State Route 99 that would have more than a 12-decibel noise increase. There are 40 frequent outdoor use areas along State Route 58 and State Route 99 that would have more than a 5-decibel noise increase. Alternative C proposes 23 soundwalls to cover the entire study area, but only 17 meet the feasibility and reasonableness criteria. Refer to Section 3.2.7, Noise, for details.

The future predicted traffic noise levels with the recommended abatement measures would range from 61 to 76 dBA. There would be 21 affected frequent outdoor use areas for which noise abatement is not recommended and 19 frequent outdoor use areas that would still be affected even with the recommended soundwalls. Tables 4.9 through 4.12 show the change in traffic noise levels at each receiver location and whether an impact is a significant impact.

Table 4.9 Traffic Noise Impact Analysis – Alternative C (State Route 99 South of State Route 58)

Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative C (dBA)	Recommended Soundwall	Future Conditions with Alternative C minus Existing Conditions (2011)	Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level	Impact
R99-25A	64	67	72	--	8	0	8	Significant/Unavoidable
R99-26	61	66	69	--	8	0	8	Significant/Unavoidable
R99-27	60	65	69	--	9	0	9	Significant/Unavoidable
R99-28	61	66	69	--	8	0	8	Significant/Unavoidable
R99-29	56	61	61	--	5	0	5	Significant/Unavoidable
R99-30	57	62	65	S676	8	1	7	Significant/Unavoidable
R99-31	68	73	73	S676	5	7	-2	Less than Significant
R99-32	68	73	73	S676	5	7	-2	Less than Significant
R99-33	70	75	75	S676	5	10	-5	Less than Significant
R99-34	62	67	68	S676	6	5	1	Less than Significant
R99-36	64	69	68	S676	4	5	-1	Less than Significant
R99-37	68	73	73	S676	5	8	-3	Less than Significant
R99-40A	59	63	67	--	8	0	8	Significant/Unavoidable
R99-41A	58	62	68	--	10	0	10	Significant/Unavoidable
R99-43B	60	64	77	--	17	0	17	Significant/Unavoidable
R99-43A	57	61	67	--	10	0	10	Significant/Unavoidable

dBA: A-weighted decibels

Note:
1 - Receivers that are noise measurement sites which are not located at an outdoor use area, or those subject to acquisitions, are not listed in this table because they do not represent a future outdoor use area and do not qualify for noise abatement.

Source: Developed from the *Noise Study Report* 2013.

Table 4.10 Traffic Noise Impact Analysis – Alternative C (State Route 99 North of State Route 58)

Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative C (dBA)	Recommended Soundwall	Future Conditions with Alternative C minus Existing Conditions (2011)	Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level	Impact
R99-61	67	70	70	--	3	0	3	Less than Significant
R99-62	64	67	71	--	7	0	7	Significant/Unavoidable
R99-63	57	60	66	--	9	0	9	Significant/Unavoidable
R99-64	59	62	68	--	9	0	9	Significant/Unavoidable
R99-65	61	64	67	--	6	0	6	Significant/Unavoidable
R99-66	62	65	70	--	8	0	8	Significant/Unavoidable
R99-67	57	60	64	--	7	0	7	Significant/Unavoidable
R99-68	60	63	68	--	8	0	8	Significant/Unavoidable
R99-73	68	74	74	--	6	0	6	Significant/Unavoidable
R99-74	70	76	75	--	5	0	5	Significant/Unavoidable
R99-75	69	75	75	--	6	0	6	Significant/Unavoidable

dBA: A-weighted decibels

Note:
1 - Receivers that are noise measurement sites which are not located at an outdoor use area, or those subject to acquisitions, are not listed in this table because they do not represent a future outdoor use area and do not qualify for noise abatement.

Source: Developed from the *Noise Study Report* 2013.

Table 4.11 Traffic Noise Impact Analysis – Alternative C (State Route 58)

Receiver[1]	Existing Noise Level (dBA)	Predicted Noise Level with the No-Build Alternative (dBA)	Predicted Noise Level with Alternative C (dBA)	Recommended Soundwall	Future Conditions with Alternative C minus Existing Conditions (2011)	Noise Reduction (dBA)	Increase/ Decrease from Existing Noise Level	Impact
R58-4	67	70	74	S103 & S109	7	6	1	Less than Significant
R58-5	60	63	70	S103 & S109	10	3	7	Significant/Unavoidable
R58-6	58	61	68	S103 & S109	10	5	5	Significant/Unavoidable
R58-7	67	70	76	S103 & S109	9	9	0	Less than Significant
R58-7A	61	64	70	S103 & S109	9	5	4	Less than Significant
R58-8	68	71	76	S103 & S109	8	8	0	Less than Significant
R58-9	65	70	74	S103 & S109	9	9	0	Less than Significant
R58-10	65	70	74	S103 & S109	9	9	0	Less than Significant
R58-43	62	65	66	--	4	0	4	Less than Significant
R58-44	62	65	67	--	5	0	5	Significant/Unavoidable
R58-69	62	65	67	--	5	0	5	Significant/Unavoidable

dBA: A-weighted decibels

Note:
1 - Receivers that are noise measurement sites which are not located at an outdoor use area, or those subject to acquisitions, are not listed in this table because they do not represent a future outdoor use area and do not qualify for noise abatement.

Source: Developed from the *Noise Study Report* 2013.

Alternatives A and B

Aesthetics

Alternatives A and B would add a major new transportation corridor in the Westpark community, dividing the existing neighborhood and creating a substantial permanent change in the visual environment. Portions of Alternative B (between California Avenue and Ford Avenue) would be built below grade, which would minimize the aesthetic impacts, but there would be new soundwalls and retaining walls. Segments of the freeway would be built at grade with the existing surrounding developments. Elevated segments would be built over existing roadways and the Kern River. Existing residential, commercial, and industrial structures would be demolished and replaced to accommodate the freeway construction, resulting in moderately high adverse changes to the visual character and quality of the site and its surroundings.

Mitigation measures V-1 through V-5, which include landscaping and aesthetic treatment of freeway elements (such as bridges), would be implemented to reduce the significant adverse aesthetic impacts of the build alternatives. Even with mitigation measures, visual impacts would remain significant and unavoidable under Alternatives A and B.

Land Use and Planning (Community Impacts)

As noted above, Alternatives A and B would permanently convert certain land uses and introduce a major new transportation corridor into the Westpark community, which would divide an existing neighborhood. The Centennial Corridor would segment and isolate portions of the neighborhood and alter circulation patterns because of changes to the internal roadway network, even with proposed mitigation. As discussed in Chapter 3, impacts to community cohesiveness generally depend on whether a project is likely to create a barrier effect or otherwise disrupt the existing connectivity of a community. Either of these can be a result of disruptions in access, or substantial residential and commercial property acquisitions; to accommodate a new freeway segment, Alternatives A and B do both.

All property acquisition and relocations would be handled in accordance with the Uniform Relocation Act of 1970, as amended, which mandates certain relocation services and payments by Caltrans be made available to eligible residents, businesses, and nonprofit organizations displaced by Caltrans projects. Design refinements to avoid or minimize impacts to existing land uses related both to temporary construction use and/or permanent acquisition of properties would be incorporated in the final engineering design of the selected build alternative to the extent practical. If, however, displaced residents are required to relocate outside of their immediate neighborhood or sub-community, existing supportive family and community relationships may be severed for those leaving, as well as for those remaining behind. Neighbors, friends, and family, as discussed earlier, often provide emotional support that cannot be easily replicated. These characteristics of a cohesive community cannot be completely mitigated and are unavoidable. Concerning non-residential displacements, several types of businesses that may be difficult to relocate as a result of the project have been identified. The severity of non-residential property impacts

would vary with the type of business displaced. Certain businesses typically experience a greater challenge to find a suitable replacement site, such as automotive repair garages and gasoline service stations, among others, because these types of businesses traditionally serve localized market areas.

Despite measures required by the Uniform Relocation Act, no available reasonable mitigation measures would reduce all community impacts in their entirety. Impacts would remain significant and unavoidable. Therefore, Alternatives A and B would have unavoidable significant impacts on the community.

4.3 Significant Irreversible Environmental Changes

As discussed in Section 3.5, the impacts of the build alternatives would be similar to each other and construction would require the commitment of natural, physical, human, and fiscal resources. The loss of existing developed properties and use of the land that would be acquired and added into the freeway/roadway right-of-way would be an irreversible and long-term commitment of this resource. Construction would also require use of fossil fuels, water, and construction materials such as concrete cement, aggregates (sand and gravel), asphalt, reinforcement bars, paint, fencing, pipes, and other materials that are generally not retrievable once they have been used to build a road. Labor would be needed to make construction materials, demolish existing structures and infrastructure, and build the proposed improvements. However, the project would result in a beneficial impact to labor resources based on the labor availability in the city of Bakersfield or Kern County. But, labor is not in short supply and would not have an adverse effect upon its continued availability in the city of Bakersfield or Kern County.

Lastly, the project would require a substantial one-time expenditure of local, state, and federal funds, which are not retrievable. However, commitment of these resources would benefit residents and businesses in the metropolitan Bakersfield area, the Central Valley, and the state through an improved transportation system. These benefits would consist of improved accessibility, which is expected to outweigh the irreversible and irretrievable commitment of resources.

4.4 Minimization and Mitigation Measures for Significant Impacts under the California Environmental Quality Act

Impacts are avoided or minimized through implementation of standard conditions, minimization measures, and mitigation measures (identified at the end of each topic in Chapter 3). Implementation of the standard conditions is assumed prior to making the determination if an impact is significant, since these are regulatory requirements or practices that Caltrans routinely applies to all projects. Other mitigation measures would reduce impacts identified as significant. Mitigation measures are listed below with a cross reference to the section where the mitigation measure can be found. In addition, all of the mitigation measures and standard conditions are listed in Appendix F, Volume 2. No mitigation measures would apply to the No-Build Alternative because no improvements would be made.

Aesthetics

- V-1 see Section 3.1.7 for the full mitigation measure.
- V-2 see Section 3.1.7 for the full mitigation measure.
- V-3 see Section 3.1.7 for the full mitigation measure.
- V-4 see Section 3.1.7 for the full mitigation measure.
- V-5 see Section 3.1.7 for the full mitigation measure.

Biological Resources

- B-1 see Section 3.3.2 for the full mitigation measure.
- B-2 see Section 3.3.2 for the full mitigation measure (Alternative A only).
- CI-18 see Section 3.6 for the full mitigation measure.
- B-3 see Section 3.3.3 for the full mitigation measure.
- B-4 see Section 3.3.3 for the full mitigation measure.
- CI-19 see Section 3.6 for the full mitigation measure.
- CI-20 see Section 3.6 for the full mitigation measure.
- CI-21 see Section 3.6 for the full mitigation measure.
- CI-22 see Section 3.6 for the full mitigation measure.
- CI-23 see Section 3.6 for the full mitigation measure.
- CI-24 see Section 3.6 for the full mitigation measure.
- CI-25 see Section 3.6 for the full mitigation measure.
- CUM-1 see Section 3.7 for the full mitigation measure.

Cultural Resources

- CI-1 see Section 3.6 for the full mitigation measure.
- CI-2 see Section 3.6 for the full mitigation measure.
- CR-1 see Section 3.1.8 for the full mitigation measure (Alternative A only).
- CR-2 see Section 3.1.8 for the full mitigation measure (Alternative A only).

Paleontological Resources

- CI-3 see Section 3.6 for the full mitigation measure.
- CI-4 see Section 3.6 for the full mitigation measure.
- CI-5 see Section 3.6 for the full mitigation measure.
- CI-6 see Section 3.6 for the full mitigation measure.
- CI-7 see Section 3.6 for the full mitigation measure.
- CI-8 see Section 3.6 for the full mitigation measure.
- CI-9 see Section 3.6 for the full mitigation measure.
- CI-10 see Section 3.6 for the full mitigation measure.
- CI-11 see Section 3.6 for the full mitigation measure.
- CI-12 see Section 3.6 for the full mitigation measure.
- CI-13 see Section 3.6 for the full mitigation measure.
- CI-14 see Section 3.6 for the full mitigation measure.
- CI-15 see Section 3.6 for the full mitigation measure.
- CI-16 see Section 3.6 for the full mitigation measure.

Hazards and Hazardous Materials

- H-1 see Section 3.2.5 for full minimization measure.
- H-2 see Section 3.2.5 for full minimization measure.
- H-3 see Section 3.2.5 for full minimization measure.
- H-4 see Section 3.2.5 for full minimization measure.

Noise

- N-1 see Section 3.2.7 for the full abatement measure.
- CI-17 see Section 3.6 for the full mitigation measure.

Public Services – Parks (Recreation)

- PR-1 see Section 3.1.1.3 for the full mitigation measure.
- PR-2 see Section 3.1.1.3 for the full mitigation measure (Alternative C only).

4.5 Climate Change under the California Environmental Quality Act

Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the earth's climate system. An ever-increasing body of scientific research attributes these climatological changes to greenhouse gases, particularly those generated from the production and use of fossil fuels.

While climate change has been a concern for several decades, the establishment of the Intergovernmental Panel on Climate Change by the United Nations and World Meteorological Organization in 1988, has led to increased efforts devoted to greenhouse gas emissions reduction and climate change research and policy. These efforts are primarily concerned with the emissions of greenhouse gases related to human activity that include carbon dioxide, methane, nitrous oxide, tetrafluoromethane, hexafluoroethane, sulfur hexafluoride, HFC-23 (fluoroform), HFC-134a (s, s, s, 2 tetrafluoroethane), and HFC-152a (difluoroethane).

In the U.S., the main source of greenhouse gas emissions is electricity generation, followed by transportation. In California, however, transportation sources (including passenger cars, light duty trucks, other trucks, buses, and motorcycles) make up the largest source (second to electricity generation) of greenhouse gas emitting sources. The dominant greenhouse gas emitted is carbon dioxide, mostly from fossil fuel combustion.

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

There are four primary strategies for reducing greenhouse gas emissions from transportation sources: 1) improving the transportation system and operational efficiencies, 2) reducing travel activity, 3) transitioning to lower greenhouse gas-emitting fuels, and 4) improving vehicle technologies/efficiency. To be most effective, all four strategies should be pursued collectively.[2]

4.5.1 Regulatory Setting

State

With the passage of several pieces of legislation including State Senate and Assembly Bills and Executive Orders, California launched an innovative and proactive approach to dealing with greenhouse gas emissions and climate change.

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

2 http://www.fhwa.dot.gov/environment/climate_change/mitigation/

Assembly Bill 1493 (AB 1493), Pavley. *Vehicular Emissions: Greenhouse Gases, 2002*: This bill 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.

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

Assembly Bill 32, Núñez and Pavley, the Global Warming Solutions Act of 2006: Núñez and Pavley: This bill sets the same overall greenhouse gas emissions reduction goals outlined in Executive Order S-3-05, while further mandating that California Air Resources Board create a scoping plan and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases."

Executive Order S-20-06 (October 18, 2006): This order establishes the responsibilities and roles of the Secretary of the California Environmental Protection Agency (Cal/EPA) and state agencies with regard to climate change.

Executive Order S-01-07 (January 18, 2007): This order set forth the low carbon fuel standard for California. Under this order, the carbon intensity of California's transportation fuels is to be reduced by at least 10 percent by 2020.

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

Senate Bill 375 (SB 375), Chapter 728, 2008, Sustainable Communities and Climate Protection: This bill requires the California Air Resources Board to set regional emissions reduction targets from passenger vehicles. The Metropolitan Planning Organization for each region must then develop a "Sustainable Communities Strategy" that integrates transportation, land-use, and housing policies to plan for the achievement of the emissions target for their region.

Senate Bill 391 (SB 391) Chapter 585, 2009 California Transportation Plan: This bill requires the State's long-range transportation plan to meet California's climate change goals under Assembly Bill 32.

Federal

Although climate change and greenhouse gas reduction are a concern at the federal level, currently no legislation or regulation has been enacted specifically addressing greenhouse gas emissions reductions and climate change at the project level. Neither the U.S. Environmental Protection Agency nor the Federal Highway Administration

has issued explicit guidance or methods to conduct project-level greenhouse gas analysis.[3] Federal Highway Administration supports the approach that climate change considerations should be integrated throughout the transportation decision-making process, from planning through project development and delivery. Addressing climate change mitigation and adaptation up front in the planning process will facilitate decision-making and improve efficiency at the program level, and will inform the analysis and stewardship needs of project-level decision-making. Climate change considerations can be integrated into many planning factors, such as supporting economic vitality and global efficiency, increasing safety and mobility, enhancing the environment, promoting energy conservation, and improving the quality of life.

The four strategies set forth by the Federal Highway Administration to lessen climate change impacts do correlate with efforts that the state is undertaking to deal with transportation and climate change; these strategies include improved transportation system efficiency, cleaner fuels, cleaner vehicles, and a reduction in travel activity.

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

Executive Order 13514 (October 5, 2009) is focused on reducing greenhouse gases internally in federal agency missions, programs and operations, but also directs federal agencies to participate in the Interagency Climate Change Adaptation Task Force, which is engaged in developing a national strategy for adaptation to climate change.

The U.S. Environmental Protection Agency's authority to regulate greenhouse gas emissions stems from the U.S. Supreme Court decision in *Massachusetts v.* U.S. Environmental Protection Agency (2007). The Supreme Court ruled that greenhouse gases meet the definition of air pollutants under the existing Clean Air Act and must be regulated if these gases could be reasonably anticipated to endanger public health or welfare. Responding to the Court's ruling, U.S. Environmental Protection Agency finalized an endangerment finding in December 2009. Based on scientific evidence it found that six greenhouse gases constitute a threat to public health and welfare. Thus, it is the Supreme Court's interpretation of the existing Act and the Environmental Protection Agency's assessment of the scientific evidence that form the basis for Environmental Protection Agency's regulatory actions. U.S. Environmental Protection Agency in conjunction with the National Highway Traffic Safety Administration issued the first of a series of greenhouse gas emission standards for new cars and light-duty vehicles in April 2010.[4]

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[3] To date, no national standards have been established regarding mobile source GHGs, nor has U.S. EPA established any ambient standards, criteria or thresholds for GHGs resulting from mobile sources.

[4] http://www.c2es.org/federal/executive/epa/greenhouse-gas-regulation-faq

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

The final combined standards that make up the first phase of this national program apply to passenger cars, light-duty trucks, and medium-duty passenger vehicles, covering model years 2012 through 2016. The standards implemented by this program are expected to reduce greenhouse gas emissions by an estimated 960 million metric tons and 1.8 billion barrels of oil over the lifetime of the vehicles sold under the program (model years 2012-2016).

On August 28, 2012, U.S. Environmental Protection Agency and the National Highway Traffic Safety Administration issued a joint Final Rulemaking to extend the National Program for fuel economy standards to model year 2017 through 2025 passenger vehicles. Over the lifetime of the model year 2017-2025 standards this program is projected to save approximately four billion barrels of oil and two billion metric tons of greenhouse gas emissions.

The complementary U.S. Environmental Protection Agency and the National Highway Traffic Safety Administration standards that make up the Heavy-Duty National Program apply to combination tractors (semi trucks), heavy-duty pickup trucks and vans, and vocational vehicles (including buses and refuse or utility trucks). Together, these standards will cut greenhouse gas emissions and domestic oil use significantly. This program responds to President Barack Obama's 2010 request to jointly establish greenhouse gas emissions and fuel efficiency standards for the medium- and heavy-duty highway vehicle sector. The agencies estimate that the combined standards will reduce carbondioxide emissions by about 270 million metric tons and save about 530 million barrels of oil over the life of model year 2014 to 2018 heavy duty vehicles.

4.5.2 Project Analysis

An individual project does not generate enough greenhouse gas emissions to significantly influence global climate change. Rather, global climate change is a cumulative impact. This means that a project may contribute to a potential impact through its incremental contribution combined with the contributions of all other sources of greenhouse gas.[5] In assessing cumulative impacts, it must be determined if a project's incremental effect is "cumulatively considerable." See (California

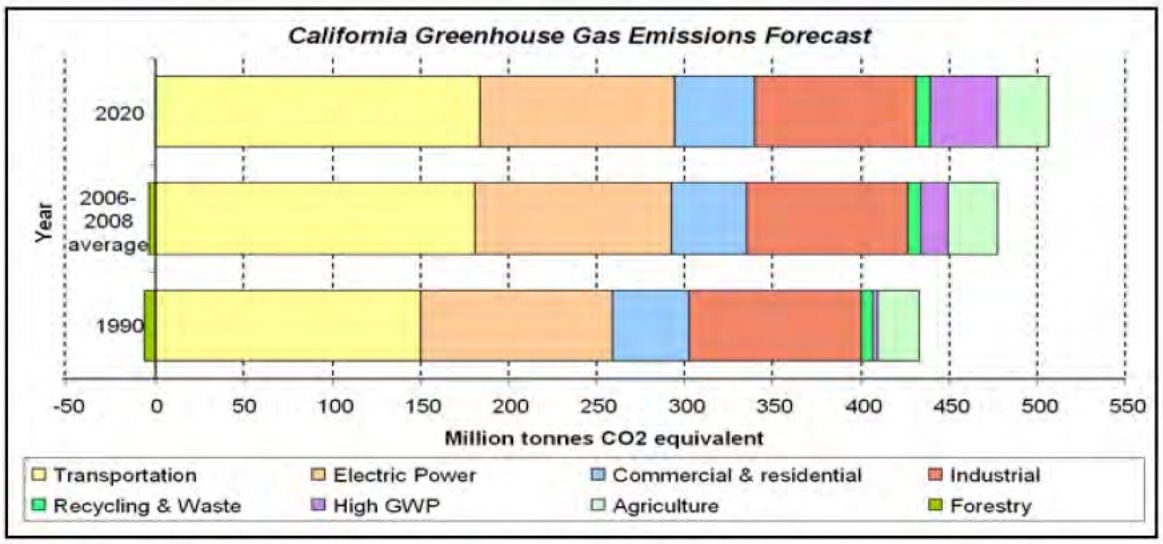
[5] This approach is supported by the Association of Environmental Professionals: Recommendations by the *Association of Environmental Professionals on How to Analyze [Greenhouse Gas] Emissions and Global Climate Change in [California Environmental Quality Act] Documents* (March 5, 2007), as well as the South Coast Air Quality Management District (Chapter 6: The CEQA Guide, April 2011) and the U.S. Forest Service (Climate Change Considerations in Project Level National Environmental Policy Act Analysis, July 13, 2009).

Environmental Quality Act Guidelines Sections 15064(h)(1) and 15130). To make this determination, the incremental impacts of the project must be compared with the effects of past, current, and probable future projects. To gather sufficient information on a global scale of all past, current, and future projects to make this determination is a difficult, if not impossible, task.

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

Figure 4-2 shows the total greenhouse gas emissions for California for 1990, 2006-2008 average, and projected 2020.

Figure 4-2 California Greenhouse Gas Forecast



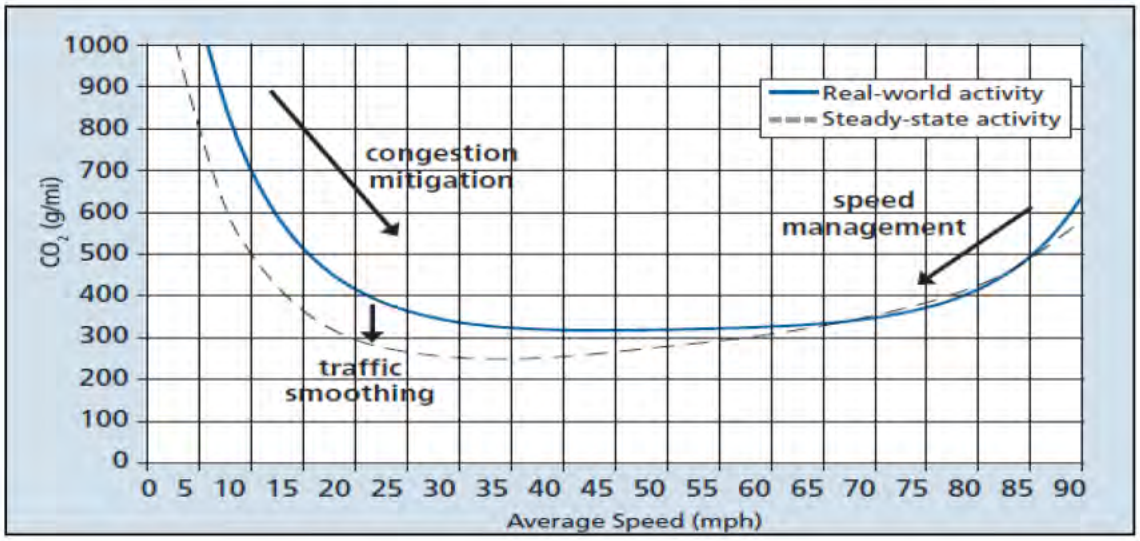
Source: http://www.arb.ca.gov/cc/inventory/data/forecast.htm

Caltrans and its parent agency, the Transportation Agency, have taken an active role in addressing greenhouse gas emission reduction and climate change. Recognizing that 98 percent of California's greenhouse gas emissions are from the burning of fossil fuels and 40 percent of all human-made greenhouse gas emissions are from

transportation, Caltrans has created and is implementing the *Climate Action Program at Caltrans*, published in December 2006.[6]

One of the main strategies in Caltrans' Climate Action Program to reduce greenhouse gas emissions is to make California's transportation system more efficient. The highest levels of carbon dioxide from mobile sources, such as automobiles, occur at stop-and-go speeds (0 to 25 miles per hour) and speeds over 55 miles per hour; the most severe emissions occur from 0 to 25 miles per hour (see Figure 4-3 below). To the extent that a project relieves congestion by enhancing operations and improving travel times in high congestion travel corridors greenhouse gas emissions, particularly carbondioxide, may be reduced.

Figure 4-3 Possible Effect of Traffic Operations Strategies in Reducing On-road Carbon Dioxide (CO_2) Emissions



Relieving congestion by enhancing operations and improving travel times in high congestion travel corridors will lead to an overall reduction in greenhouse gas emissions. A stated project objective is to reduce congestion and improve traffic operations, which is consistent with the objectives of the Climate Action Program.

The purpose of the Centennial Corridor project is to make improvements that will provide interregional and regional connectivity for east-west traffic traveling within metropolitan Bakersfield and Kern County and continuity for State Route 58 in Kern County. State Route 58 is a critical link in the state transportation network used by interstate travelers, commuters, and a large number of trucks. State Route 58 lacks

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

continuity in central Bakersfield, which results in severe traffic congestion and reduced levels of service on adjoining highways and local streets.

The project is expected to improve local east-west circulation; facilitate congestion management; and reduce commercial and regional commute time through a major freight corridor. Implementation of the project would help to reduce regional greenhouse gas emissions by promoting vehicle operational efficiency through reduced congestion and shorter vehicle trips and reduced vehicle miles traveled by offering more direct roadway connections through the corridor. Note that the vehicle miles traveled (VMT) for various years (2008, 2018, and 2038) used for air pollutant emission calculations can be found in Appendix A-2 of the Air Quality Study Report.

Quantitative Analysis

Greenhouse gas emissions for transportation projects can be divided into emissions produced during construction and those produced during operations.

Construction Emissions

Construction greenhouse gas emissions include emissions produced as a result of material processing, emissions produced by onsite construction equipment, and emissions arising from traffic delays due to construction. These emissions would be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases. Table 4.12 below estimates that the Project's construction would result in a total of 7,183.40 metric tons of carbon dioxide over the three year construction period.

Table 4.12 Estimate of Annual Carbon Dioxide Emissions During Construction

		Construction Annual Emissions (Metric Tons of CO_2 per year)
Year 1	Total	4,848.22
	Onsite	934.54
Year 2	Total	2,033.95
	Onsite	921.74
Year 3	Total	301.22
	Onsite	253.75
Project Total		7,183.40
Source: *Air Quality Study Report* 2013.		

Operational Emissions

The project is a transportation facility; therefore, the greenhouse gas emissions would include operational greenhouse gas emissions from vehicle traffic along the project corridor. Greenhouse gas emissions from vehicle traffic along the affected roadways (with the No-Build Alternative and with the build alternatives) were calculated using

the emission factors for on-road mobile sources using the EMFAC2011 model, annual vehicle miles traveled along the project roadways.

Tables 4.13, 4.14, and 4.15 summarize the annual operational greenhouse gas emissions associated with vehicle traffic along the studied roadways for Alternatives A, B, and C, respectively. Vehicle traffic is quantified in terms of vehicle miles traveled (VMT). The VMT used to calculate the operational emissions can be found in Appendix A-2 of the Air Quality Study Report, prepared for this project. Greenhouse gas emissions are estimated for baseline year 2008 (existing conditions), opening year 2018, and design year 2038 for the No-Build Alternative and for the build alternative scenarios. Sources considered in the emission calculations are the same as those analyzed for criteria pollutants. Carbon dioxide emissions for the baseline year (2008) was estimated at 234,846 metric tons per year. Carbon dioxide emissions are the main greenhouse gas of concern, as vehicle operation does not result in appreciable amounts of other greenhouse gases (such as methane, nitrous oxides, etc.), and thus only carbon dioxide emissions were calculated and presented.

In addition to providing the emissions by year and build scenario, the data in the bottom portion of Tables 4.13, 4.14, and 4.15 present estimates of operational emissions of greenhouse gases reflecting implementation of two important California rules/standards [Assembly Bill 1439 (Pavley) and Assembly Bill 32 via the Low Carbon Fuels Standard], which establish stricter standards to reduce greenhouse gas emissions from passenger cars and light duty trucks (see Section 4.5.1). These emissions were estimated using the EMFAC2011 Model, which includes data for carbon dioxide emissions for the fleet mix with implementation of these new standards.

It should be noted that, while the carbon dioxide emissions factor does assume certain reductions in vehicle emissions due to future vehicle models operating more efficiently, additional reductions in vehicle emissions would also occur in response to new and stricter legislated standards as they become implemented. Therefore, the numbers are not an accurate reflection of what the true carbon dioxide emissions will be and may actually overstate the expectations because carbon dioxide emissions depend on other factors that are not part of the model representation, such as fuel mix; rate of acceleration; and the aerodynamics and efficiency of the vehicles themselves.

Alternative A

Table 4.13 shows that, in the two future year scenarios, annual operational emissions of greenhouse gas (mainly carbon dioxide) would increase relative to the 2008 baseline. This is due to the regional population and economic growth, and the associated increase in the daily traffic.

For future studied years, the build alternatives' operational emissions of greenhouse gases, combined for all studied roadway segments, show a relatively small increase when compared with the No-Build Alternative of the same year (less than 4 percent for opening year 2018 and about 9 percent for design year 2038), as shown in Table 4.13. This small increase is attributable mainly to the availability of the new 9-mile-long (four

lane) Westside Parkway, proposed new alignment, which provides a connection between two highway segments (the Westside Parkway and State Route 58 East) and new freeway-to-freeway connectors as well as to the widening of a portion of State Route 58 between State Route 99 and Cottonwood Road (a total of 27.8 lane miles of additional travel lane pavement would be created). As Table 4.13 shows, under Assembly Bill 1439 (Pavley) and Assembly Bill 32 via the Low Carbon Fuels Standard, an average of about 21 percent reduction of vehicular emissions of greenhouse gases of the build alternative would be achieved in 2018 and an average of about 33 percent reduction of the build alternative would be anticipated in 2038.

Alternative B

The annual operational emissions of greenhouse gas emissions (mainly carbon dioxide) associated with proposed Alternative B estimated for opening year 2018 and horizon year 2038 are shown in Table 4.14.

Data in Table 4.14 indicate a trend very similar to the data for Alternative A (see Table 4.13). Project operational emissions of carbon dioxide in future analyzed years would increase relative to the 2008 baseline due to an increase in daily traffic and vehicle miles traveled associated with regional development and population growth. A comparison of operational emissions of greenhouse gases from Alternative B with the No-Build Alternative scenario shows slight increases in total emissions in opening year 2018 and in horizon year 2038. This small increase is about 7 percent for 2018 and about 12 percent for 2038 from the respective no-build conditions, for the same reasons described under Alternative A. Total greenhouse gas operational emissions under build scenarios are estimated to be only about 3 percent higher than those estimated for Alternative A.

Alternative C

The annual operational emissions of greenhouse gas emissions (mainly carbon dioxide) associated with Alternative C, estimated for opening year 2018 and horizon year 2038, are shown in Table 4.15.

Similar to Alternatives A and B, the project operational emissions of carbon dioxide in future analyzed years would increase relative to the 2008 baseline due to an increase in daily traffic and vehicle miles traveled associated with regional development and population growth. This increase is about 8 percent for 2018 and about 12 percent for 2038 from the respective no-build conditions. A comparison of operational emissions of greenhouse gases from Alternative C with Alternatives A and B shows that Alternative C is similar to Alternative B, and the total greenhouse gas emission is less than 1 percent above the emission estimate for Alternative B and 2 to 4 percent higher than estimated emissions for Alternative A.

Table 4.13 Annual Operational Carbon Dioxide Emissions from Operation of Build Alternative A (Metric tons/year)

Roadway Segment	Existing Baseline 2008 (A)	Opening Year 2018		Horizon Year 2038	
		No Build (B)	Build (C)	No Build (E)	Build (F)
Rosedale Highway – Allen Road to State Route 99	34,626	43,942	32,558	51,634	41,657
Stockdale Highway/Brundage Lane – Allen Road to H Street	34,144	25,965	19,606	34,040	23,108
California Avenue – Stockdale Highway to State Route 99	7,460	8,157	7,681	9,305	8,099
Westside Parkway – Allen Road to State Route 99	0 [a]	47,401	85,057	78,788	149,836
State Route 58 – State Route 99 to Cottonwood Road	32,817	52,065	53,549	67,325	72,895
State Route 99 – Airport Drive to White Lane	112,911	151,284	141,742	187,887	172,897
Mohawk Street – California Avenue to Rosedale Highway	4,076	6,907	5,640	10,167	8,070
Real Road – Stockdale Highway to California Avenue	2,170	1,660	2,311	1,831	2,427
Freeway to Freeway Connectors [b]	6,644	8,360	10,701	10,779	12,765
Total – All studied roadways	234,849	345,741	358,845	451,757	491,754
Carbon dioxide emissions with implementation of Pavley I [c] and Low Carbon Fuel Standard [d]					
Rosedale Highway – Allen Road to State Route 99	34,626	35,820	26,587	36,287	29,483
Stockdale Highway/Brundage Lane – Allen Road to H Street	34,144	20,584	15,562	22,772	15,512
California Avenue – Stockdale Highway to State Route 99	7,460	6,457	6,093	6,219	5,436
Westside Parkway – Allen Road to State Route 99	0 [a]	37,999	68,207	53,861	102,636
State Route 58 – State Route 99 to Cottonwood Road	32,817	42,040	42,981	46,336	50,133
State Route 99 – Airport Drive to White Lane	112,911	123,238	115,415	130,904	120,876
Mohawk Street – California Avenue to Rosedale Highway	4,076	5,473	4,469	6,809	5,416
Real Road – Stockdale Highway to California Avenue	2,170	1,302	1,813	1,203	1,596
Freeway to Freeway Connectors [b]	6,644	6,889	8,804	7,753	9,173
Total – All studied roadways	234,849	279,802	289,931	312,144	340,262
Emissions reduction due to Pavley I [b] and Low Carbon Fuel Standard [c]		18% to 22%		29% to 34%	

[a] Roadway segment did not exist in 2008 and was constructed after Base Year 2008.
[b] Studied freeway-to-freeway connectors include: State Route 99 northbound connectors to State Route 58 eastbound and westbound, State Route 99 southbound connectors to State Route 58 eastbound and westbound, State Route 58 westbound connectors to State Route 99 northbound and southbound.
[c] Assembly Bill 1493, also known as Pavley I, includes stricter standards to reduce greenhouse gas emissions from automobiles and light trucks, model years 2017-2025.
[d] California Assembly Bill AB 32 calls for a reduction of at least 10 percent in the carbon intensity of California's transportation fuels by 2020.

Actual emissions would generally be smaller for certain roadways and the overall project than reported in this table because the predicted truck volumes on parts of the Westside Parkway and State Route 58 are smaller than those used in this regional analysis which represents the worst case.

Source: *Air Quality Study Report* 2013.

Table 4.14 Annual Operational Carbon Dioxide Emissions from Operation of Build Alternative B (Metric tons/year)

Roadway Segment	Existing Baseline 2008 (A)	Opening Year 2018		Horizon Year 2038	
		No Build (B)	Build (C)	No Build (E)	Build (F)
Rosedale Highway – Allen Road to State Route 99	34,626	43,942	31,873	51,634	41,407
Stockdale Highway/Brundage Lane – Allen Road to H Street	34,144	25,965	18,767	34,040	22,304
California Avenue – Stockdale Highway to State Route 99	7,460	8,157	7,181	9,305	7,440
Westside Parkway – Allen Road to State Route 99	0 [a]	47,401	98,144	78,788	161,796
State Route 58 – State Route 99 to Cottonwood Road	32,817	52,065	53,568	67,325	74,349
State Route 99 – Airport Drive to White Lane	112,911	151,284	140,168	187,887	170,898
Mohawk Street – California Avenue to Rosedale Highway	4,076	6,907	7,242	10,167	10,556
Real Road – Stockdale Highway to California Avenue	2,170	1,660	2,228	1,831	2,434
Freeway to Freeway Connectors [b]	6,644	8,360	10,596	10,779	12,754
Total – All studied roadways	234,849	345,741	369,768	451,757	503,939
Carbon dioxide emissions with implementation of Pavley I [c] and Low Carbon Fuel Standard [d]					
Rosedale Highway – Allen Road to State Route 99	34,626	35,820	26,033	36,287	29,317
Stockdale Highway/Brundage Lane – Allen Road to H Street	34,144	20,584	14,896	22,772	14,974
California Avenue – Stockdale Highway to State Route 99	7,460	6,457	5,696	6,219	4,995
Westside Parkway – Allen Road to State Route 99	0 [a]	37,999	78,838	53,861	111,043
State Route 58 – State Route 99 to Cottonwood Road	32,817	42,040	42,986	46,336	50,950
State Route 99 – Airport Drive to White Lane	112,911	123,238	114,154	130,904	119,445
Mohawk Street – California Avenue to Rosedale Highway	4,076	5,473	5,739	6,809	7,027
Real Road – Stockdale Highway to California Avenue	2,170	1,302	1,748	1,203	1,601
Freeway to Freeway Connectors [b]	6,644	6,889	8,720	7,753	9,174
Total – All studied roadways	234,849	279,802	298,811	312,144	348,526
Emissions reduction due to Pavley I [b] and Low Carbon Fuel Standard [c]		18% to 22%		29% to 34%	

[a] Roadway segment did not exist in 2008 and was constructed after Base Year 2008.
[b] Studied freeway-to-freeway connectors include: State Route 99 northbound connectors to State Route 58 eastbound and westbound, State Route 99 southbound connectors to State Route 58 eastbound and westbound, State Route 58 westbound connectors to State Route 99 northbound and southbound.
[c] Assembly Bill 1493, also known as Pavley I, includes stricter standards to reduce greenhouse gas emissions from automobiles and light trucks, model years 2017-2025.
[d] California Assembly Bill AB 32 calls for a reduction of at least 10 percent in the carbon intensity of California's transportation fuels by 2020.

Actual emissions would generally be smaller for certain roadways and the overall project than reported in this table because the predicted truck volumes on parts of the Westside Parkway and State Route 58 are smaller than those used in this regional analysis which represents the worst case.

Source: *Air Quality Study Report* 2013.

Table 4.15 Annual Operational Carbon Dioxide Emissions from Operation of Build Alternative C (Metric tons/year)

Roadway Segment	Existing Baseline 2008 (A)	Opening Year 2018		Horizon Year 2038	
		No Build (B)	Build (C)	No Build (E)	Build (F)
Rosedale Highway – Allen Road to State Route 99	34,626	43,942	31,831	51,634	41,498
Stockdale Highway/Brundage Lane – Allen Road to H Street	34,144	25,965	17,862	34,040	22,116
California Avenue – Stockdale Highway to State Route 99	7,460	8,157	7,076	9,305	7,075
Westside Parkway – Allen Road to State Route 99	0 [a]	47,401	96,631	78,788	160,289
State Route 58 – State Route 99 to Cottonwood Road	32,817	52,065	54,734	67,325	78,823
State Route 99 – Airport Drive to White Lane	112,911	151,284	139,685	187,887	168,023
Mohawk Street – California Avenue to Rosedale Highway	4,076	6,907	8,879	10,167	10,421
Real Road – Stockdale Highway to California Avenue	2,170	1,660	2,259	1,831	2,500
Freeway to Freeway Connectors [b]	6,644	8,360	13,978	10,779	16,009
Total – All studied roadways	234,849	345,741	372,936	451,757	506,753
Carbon dioxide emissions with implementation of Pavley I [c] and Low Carbon Fuel Standard [d]					
Rosedale Highway – Allen Road to State Route 99	34,626	35,820	25,999	36,287	29,378
Stockdale Highway/Brundage Lane – Allen Road to H Street	34,144	20,584	14,178	22,772	14,848
California Avenue – Stockdale Highway to State Route 99	7,460	6,457	5,613	6,219	4,750
Westside Parkway – Allen Road to State Route 99	0 [a]	37,999	77,652	53,861	110,128
State Route 58 – State Route 99 to Cottonwood Road	32,817	42,040	44,096	46,336	54,152
State Route 99 – Airport Drive to White Lane	112,911	123,238	113,642	130,904	115,293
Mohawk Street – California Avenue to Rosedale Highway	4,076	5,473	7,305	6,809	6,986
Real Road – Stockdale Highway to California Avenue	2,170	1,302	1,774	1,203	1,645
Freeway to Freeway Connectors [b]	6,644	6,889	11,360	7,753	11,214
Total – All studied roadways	234,849	279,802	301,620	312,144	348,393
Emissions reduction due to Pavley I [b] and Low Carbon Fuel Standard [c]		18% to 22%		29% to 34%	

[a] Roadway segment did not exist in 2008 and was constructed after Base Year 2008.
[b] Studied freeway-to-freeway connectors include: State Route 99 northbound connectors to State Route 58 eastbound and westbound, State Route 99 southbound connectors to State Route 58 eastbound and westbound, State Route 58 westbound connectors to State Route 99 northbound and southbound.
[c] Assembly Bill 1493, also known as Pavley I, includes stricter standards to reduce greenhouse gas emissions from automobiles and light trucks, model years 2017-2025.
[d] California Assembly Bill AB 32 calls for a reduction of at least 10 percent in the carbon intensity of California's transportation fuels by 2020.

Actual emissions would generally be smaller for certain roadways and the overall project than reported in this table because the predicted truck volumes on parts of the Westside Parkway and State Route 58 are smaller than those used in this regional analysis which represents the worst case.

Source: *Air Quality Study Report* 2013.

Limitations and Uncertainties with Modeling

EMFAC

Although EMFAC can calculate carbon dioxide (CO_2) emissions from mobile sources, the model does have limitations when it comes to accurately reflecting changes in carbon dioxide emissions due to impacts on traffic. According to the National

Cooperative Highway Research Program report, *Development of a Comprehensive Modal Emission Model* (April 2008) and a 2009 University of California study,[7] brief but rapid accelerations, such as those occurring during congestion, can contribute significantly to a vehicle's carbon dioxide emissions during a typical urban trip. Current emission-factor models are insensitive to the distribution of such modal events (i.e., cruise, acceleration, deceleration, and idling) in the operation of a vehicle and instead estimate emissions by average trip speed. This limitation creates an uncertainty in the model's results when compared to the estimated emissions of the various alternatives with baseline in an attempt to determine impacts. Although work by the U.S. Environmental Protection Agency and the California Air Resources Board is underway on modal-emission models, neither agency has yet approved a modal emissions model that can be used to conduct this more accurate modeling.

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

> REVISION: Both the EMFAC and OFFROAD Models develop carbon dioxide (CO_2) and methane (CH_4) emission estimates; however, they are not currently used as the basis for [California Air Resources Board's] official [greenhouse gas] inventory which is based on fuel usage information. http://www.arb.ca.gov/cc/inventory/inventory.htm. However, Air Resources Board is working towards reconciling the emission estimates from the fuel usage approach and the models.[8]

Other Variables

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

First, vehicle fuel economy is increasing. The U.S. Environmental Protection Agency's annual report, "Light-Duty Automotive Technology and Fuel Economy Trends: 1975 through 2012,"[9] which provides data on the fuel economy and technology characteristics of new light-duty vehicles including cars, minivans, sport utility vehicles, and pickup trucks, confirms that average fuel economy has improved each year beginning in 2005, and is now at a record high. Corporate Average Fuel Economy (CAFE) standards remained the same between model years 1995 and 2003 and subsequently began setting increasingly higher fuel economy standards for future vehicle model years. The U.S. Environmental Protection Agency estimates that light

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7 Matthew Bartha, Kanok Boriboonsomsin. 2009. Energy and emissions impacts of a freeway-based dynamic eco-driving system. Transportation Research Part D: Transport and Environment Volume 14, Issue 6, August 2009, Pages 400–410

8 http://www.arb.ca.gov/msei/offroad.htm

9 http://www.epa.gov/oms/fetrends.htm

duty fuel economy rose by 16 percent from 2007 to 2012. Table 4.16 shows the increases in required fuel economy standards for cars and trucks between Model Years 2012 and 2025 as available from the National Highway Traffic Safety Administration for the 2012-2016 and 2017-2025 Corporate Average Fuel Economy Standards.

Table 4.16 Average Required Fuel Economy (mpg)

	2012	2013	2014	2015	2016	2018	2020	2025
Passenger Cars	33.3	34.2	34.9	36.2	37.8	41.1-41.6	44.2-44.8	55.3-56.2
Light Trucks	25.4	26	26.6	27.5	28.8	29.6-30.0	30.6-31.2	39.3-40.3
Combined	29.7	30.5	31.3	32.6	34.1	36.1-36.5	38.3-38.9	48.7-49.7
Source: EPA 2013, http://www.epa.gov/fueleconomy/fetrends/1975-2012/420r13001.pdf								

Second, near zero carbon vehicles will come into the market during the design life of this project. According to the 2013 Annual Energy Outlook (AEO2013):

> "LDVs [light duty vehicles] that use diesel, other alternative fuels, hybrid-electric, or all-electric systems play a significant role in meeting more stringent greenhouse gas emissions and Corporate Average Fuel Economy Standards standards over the projection period. Sales of such vehicles increase from 20 percent of all new LDV sales in 2011 to 49 percent in 2040 in the Annual Energy Outlook 2013 Reference case."[10]

The greater percentage of alternative fuel vehicles on the road in the future will reduce overall greenhouse gas emissions as compared to scenarios in which vehicle technologies and fuel efficiencies do not change.

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

Lastly, driver behavior has been changing as the U.S. economy and oil prices have changed. In its January 2008 report, "Effects of Gasoline Prices on Driving Behavior and Vehicle Market,"[11]**Error! Hyperlink reference not valid.** the Congressional Budget Office found the following results based on data collected from California: 1) freeway motorists adjust to higher gas prices by making fewer trips and driving more slowly; 2) the market share of sports utility vehicles is declining; and 3) the average prices for larger, less-fuel-efficient models declined from 2003 to 2008 as average prices for the most-fuel-efficient automobiles have risen, showing an increase in

[10] http://www.eia.gov/forecasts/aeo/pdf/0383(2013).pdf
[11] http://www.cbo.gov/ftpdocs/88xx/doc8893/01-14-GasolinePrices.pdf

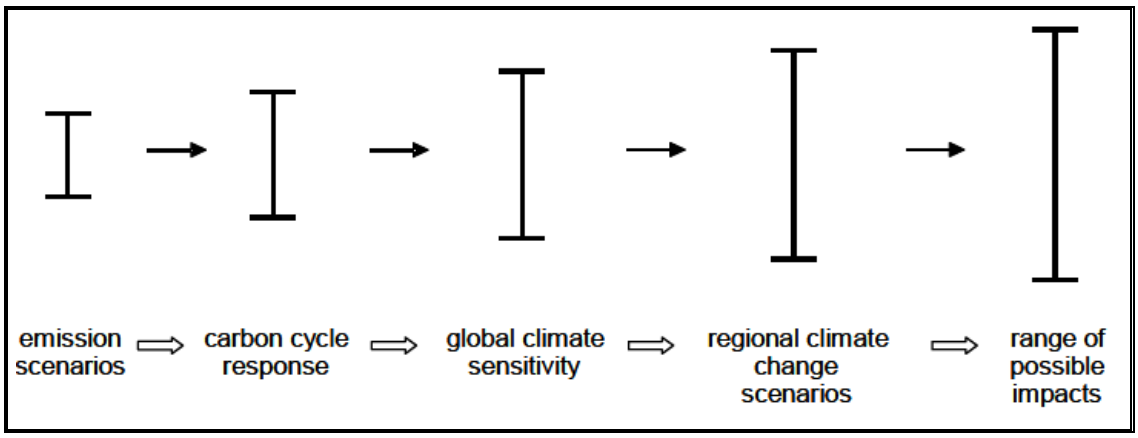
demand for the more fuel efficient vehicles. More recent reports from the Energy Information Agency[12] and Bureau of Economic Analysis[13] also show slowing re-growth of vehicle sales in the years since its dramatic drop in 2009 due to the Great Recession as gasoline prices continue to climb to $4 per gallon and beyond.

Limitations and Uncertainties with Impact Assessment

Taken from p. 5-22 of the National Highway Traffic Safety Administration Final Environmental Impact Statement for Mid-year 2017–2025 Corporate Average Fuel Economy Standards (July 2012), Figure 4-4 illustrates how the range of uncertainties in assessing greenhouse gas impacts grows with each step of the analysis:

"Moss and Schneider (2000) characterize the "cascade of uncertainty" in climate change simulations Figure 4-4). As indicated in Figure 4-4, the emission estimates used in this EIS have narrower bands of uncertainty than the global climate effects, which are less uncertain than regional climate change effects. The effects on climate are, in turn, less uncertain than the impacts of climate change on affected resources (such as terrestrial and coastal ecosystems, human health, and other resources […] Although the uncertainty bands broaden with each successive step in the analytic chain, all values within the bands are not equally likely; the mid-range values have the highest likelihood."[14]

Figure 4-4 Cascade of Uncertainties



Much of the uncertainty in assessing an individual project's impact on climate change surrounds the global nature of the climate change. Even assuming that the target of meeting the 1990 levels of emissions is met, there is no regulatory or other framework in place that would allow for a ready assessment of what any modeled

12 http://www.eia.gov/oiaf/aeo/tablebrowser/aeo_query_server/?event=ehExcel.get File&study=AEO2013 &region=0-0&cases=ref2013-d102312a&table=114-AEO2013&yearFilter=0

13 Historical Vehicle Sales: www.bea.gov/national/xls/gap_hist.xls

14 http://www.nhtsa.gov/staticfiles/rulemaking/pdf/cafe/FINAL_EIS.pdf. page 5-22

increase in carbon dioxide emissions would mean for climate change given the overall California greenhouse gas emissions inventory of approximately 430 million tons of carbon dioxide equivalent. This uncertainty only increases when viewed globally. The Intergovernmental panel on Climate Change (IPCC) has created multiple scenarios to project potential future global greenhouse gas emissions as well as to evaluate potential changes in global temperature, other climate changes, and their effect on human and natural systems. These scenarios vary in terms of the type of economic development, the amount of overall growth, and the steps taken to reduce greenhouse gas emissions. Non-mitigation IPCC scenarios project an increase in global greenhouse gas emissions by 9.7 up to 36.7 billion metric tons carbon dioxide from 2000 to 2030, which represents an increase of between 25 and 90 percent.[15]

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

California Environmental Quality Act Conclusion

Although the project includes a new highway segment and widening of a portion of an existing highway, both components accommodating more traffic volume and enhanced capacity, the redistribution of traffic because of the project is such that the resultant greenhouse gas emissions, for all alternatives, show between a 4 to 12 percent increase when compared with the no-build Alternative scenario.

Both the future with project and future no build show increases in carbon dioxide emissions over the existing levels; the future build carbon dioxide emissions are higher than the future no-build emissions for Alternatives A, B, and C. In addition, as discussed above, there are also limitations with EMFAC and with assessing what a given carbon dioxide emissions increase means for climate change. Therefore, it is Caltrans determination that in the absence of further regulatory or scientific information related to greenhouse gas emissions and California Environmental Quality Act significance, it is too speculative to make a determination regarding significance of the project's direct impact and its cumulative contribution to climate change. However, Caltrans is firmly committed to implementing measures to help reduce the potential effects of the project. These measures are outlined in the following section.

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[15] Intergovernmental Panel on Climate Change (IPCC). February 2007. Climate Change 2007: The Physical Science Basis: Summary for Policy Makers. http://www.ipcc.ch/SPM2feb07.pdf.

4.5.3 Greenhouse Gas Reduction Strategies

Assembly Bill 32 Compliance

Caltrans continues to be actively involved on the Governor's Climate Action Team as the California Air Resources Board works to implement Executive Orders S-3-05 and S-01-07 and help achieve the targets set forth in Assembly Bill 32. Many of the strategies Caltrans is using to help meet the targets in the bill come from Former Governor Arnold Schwarzenegger's Strategic Growth Plan for California. The Strategic Growth Plan targeted a significant decrease in traffic congestion below 2008 level and a corresponding reduction in greenhouse gas emissions, while accommodating growth in population and the economy. The Strategic Growth Plan relies on a complete systems approach to attain carbon dioxide reduction goals: system monitoring and evaluation, maintenance and preservation, smart land use and demand management, and operational improvements as shown in Figure 4-5.

Figure 4-5 Mobility Pyramid

Caltrans is supporting efforts to reduce vehicle miles traveled by planning and implementing smart land use strategies: job/housing proximity, transit-oriented communities, and high-density housing along transit corridors. Caltrans works closely with local jurisdictions on planning activities but does not have local land use planning authority. Caltrans also assists efforts to improve the energy efficiency of the transportation sector by increasing vehicle fuel economy in new cars, light and heavy-duty trucks; Caltrans is doing this by supporting ongoing research efforts at universities, supporting legislative efforts to increase fuel economy, and participating on the Climate Action Team. It is important to note, however, that the control of the fuel economy standards is held by the U.S. Environmental Protection Agency and California Air Resources Board.

Caltrans is also working towards enhancing the State's transportation planning process to respond to future challenges. Similar to requirements for regional transportation plans under Senate Bill (SB) 375 (Steinberg 2008), Senate Bill 391(Liu 2009) requires the State's long-range transportation plan to meet California's climate change goals under Assembly Bill (AB) 32.

The California Transportation Plan (CTP) is a statewide, long-range transportation plan to meet our future mobility needs and reduce greenhouse gas emissions. The California Transportation Plan defines performance-based goals, policies, and strategies to achieve our collective vision for California's future, statewide, integrated, multimodal transportation system.

The purpose of the California Transportation Plan is to provide a common policy framework that will guide transportation investments and decisions by all levels of government, the private sector, and other transportation stakeholders. Through this policy framework, the California Transportation Plan 2040 will identify the statewide transportation system needed to achieve maximum feasible greenhouse gas emission reductions while meeting the State's transportation needs.

Table 4.17 summarizes Caltrans' and statewide efforts that it is implementing to reduce greenhouse gas emissions. More detailed information about each strategy is included in the Climate Action Program at Caltrans (December 2006).

Caltrans Director's Policy 30 (DP-30) Climate Change (June 22, 2012): is intended to establish a Department policy that will ensure coordinated efforts to incorporate climate change into Departmental decisions and activities.

Caltrans Activities to Address Climate Change (April 2013)[16] provides a comprehensive overview of activities undertaken by Caltrans statewide to reduce greenhouse gas emissions resulting from agency operations.

The following measures would also be included in the project to reduce greenhouse gas emissions and potential climate change impacts from the project:

- Caltrans and the California Highway Patrol are working with regional agencies to implement Intelligent Transportation Systems to help manage the efficiency of the existing highway system. An Intelligent Transportation System commonly consists of electronics, communications, or information processing used singly or in combination to improve the efficiency or safety of a surface transportation system.

[16] http://www.dot.ca.gov/hq/tpp/offices/orip/climate_change/projects_and_studies.shtml

Table 4.17 Climate Change/Carbon Dioxide Reduction Strategies

Strategy	Program	Partnership		Method/Process	Estimated Carbon Dioxide Savings (million miles traveled)	
		Lead	Agency		2010	2020
Smart Land Use	Intergovernmental Review	Caltrans	Local Governments	Review and seek to mitigate development proposals	Not Estimated	Not Estimated
	Planning Grants	Caltrans	Local and regional agencies and other stakeholders	Competitive selection process	Not Estimated	Not Estimated
	Regional Plans and Blueprint Planning	Regional Agencies	Caltrans	Regional plans and application process	0.975	7.8
Operational Improvements and Intelligent Transportation System Deployment	Strategic Growth Plan	Caltrans	Regions	State Intelligent Transportation System; Congestion Management Plan	0.07	2.17
Mainstream Energy and Greenhouse Gases into Plans and Projects	Office of Policy Analysis and Research; Division of environmental Analysis	Interdepartmental effort		Policy establishment, guidelines, technical assistance	Not Estimated	Not Estimated
Educational and Information Program	Office of Policy Analysis and Research	Interdepartmental, California Environmental Protection Agency, California Air Resource Board, California Energy Commission		Analytical report, data collection, publication, workshops, outreach	Not Estimated	Not Estimated
Fleet Greening and Fuel Diversification	Division of Equipment	Department of General Services		Fleet Replacement B20 B100	0.0045	0.0065 0.045 0.0225
Non-vehicular Conservation Measures	Energy Conservation Program	Green Action Team		Energy Conservation Opportunities	0.117	0.34
Portland Cement	Office of Rigid Pavement	Cement and Construction Industries		2.5% limestone cement mix 25% fly ash cement mix > 50% fly ash/slag mix	1.2 0.36	4.2 3.6
Goods Movement	Office of Goods Movement	California Environmental Protection Agency, California Air Resource Board, Business, Transportation, and Housing, Metropolitan Planning Organizations		Goods Movement Action Plan	Not Estimated	Not Estimated
Total					2.72	18.18

Source: *Air Quality Study Report* 2013.

- Landscaping reduces surface warming and, through photosynthesis, decreases carbon dioxide. The project proposes planting in the intersection slopes, drainage channels, and seeding in areas next to frontage roads and planting a variety of different-sized plant material and scattered skyline trees where appropriate but not to obstruct 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 Foundation[17], it is anticipated that the planted trees would offset between 7 and 10 tons of carbon dioxide per year.
- According to Caltrans Standard Specification Provisions, idling time for lane closure during construction is restricted to 10 minutes in each direction. In addition, the contractor must comply with San Joaquin Valley Air Pollution Control District's rules, ordinances, and regulations in regard to air quality restrictions, including idling restrictions for trucks at the construction sites.
- Consistent with the greenhouse gas mitigation measures of the Kern Council of Government 2011 Regional Transportation Plan Environmental Impact Report, the project would incorporate the use of energy-efficient lighting, such as light-emitting diode (LED) traffic signals. Light-emitting diode (LED) bulbs cost $60 to $70 a piece, but last 5 to 6 years, compared to the 1-year average lifespan of the incandescent bulbs previously used. The light-emitting diode (LED) bulbs themselves consume 10 percent of the electricity of traditional lights, which will also help reduce the project's carbon dioxide emissions.[18]
- Support efforts that further analyze greenhouse gas emission contributions from goods movement through transportation corridors, trucking and other relevant freight movement practices.
- Support the use of grants, loans and incentives to assist local governments with the implementation of climate change response activities and greenhouse gas reduction strategies.
- Use circulation elements of general plans to ensure that development is consistent and well connected by alternative transportation modes (as required by Assembly Bill 1358 effective January 1, 2011).
- Promote reduced travel by proving park-and-ride lots.
- In transit-oriented areas, provide for express transit or bus rapid transit service and circulator feeder systems. Service should plan for direct access to the Bakersfield High Speed Rail station.
- In transit-oriented areas, reduce parking requirements and provide car/vanpool parking areas.

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17 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.

18 Knoxville Business Journal, "[Light-Emitting Diode] Lights Pay for Themselves," May 19, 2008 at http://www.knoxnews.com/news/2008/may/19/led-traffic-lights-pay-themselves/.

- Encourage project site designs and subdivision street and lot designs that support walking, bicycling, and transit use:
  - Adopt design guidelines and standards promoting plans that encourage alternative transportation modes; and
  - Require certain sites to be created to allow convenient access by transit, bicycle, and walking.
- Accommodate projected population growth by identifying appropriate areas for urban and rural growth, economic development, and multi-modal transportation corridors that support smart growth principles.
- Encourage the design and development of an effective transportation system that integrates all modes into a seamless, reliable, cost-efficient system, including intelligent transportation solutions and high tech communication options.
- Support intermodal travel including park-and-ride, rideshare, bicycle, rail and transit programs.
- Support increased mass transit connectivity and accessibility.
- Promote reduction of vehicle miles traveled.
- Promote landscaping strategies that will reduce greenhouse gas.
- Promote the use of light-emitting diode (LED) technology or comparable energy-efficient technology for traffic lights, rail signals and other features compatible with light-emitting diode (LED) or comparable energy-efficient technologies.
- Support the use of procurement practices that promote the use of energy efficient products and equipment.
- Support and coordinate efforts that address strategies to reduce greenhouse gases into planning efforts. and
- Promote energy efficiency, solar energy production and other methods of reducing greenhouse gas production.

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 increasing variability in precipitation, rising temperatures, rising sea levels, variability in storm surges and intensity, and the frequency and intensity of wildfires. These changes may affect the transportation infrastructure in various ways, such as damage to roadbeds from longer periods of intense heat; increasing storm damage from flooding and erosion; and inundation from rising sea levels. These effects will vary by location and may, in the most extreme cases, require that a facility to be relocated or redesigned. There may also be economic and strategic ramifications as a result of these types of impacts to the transportation infrastructure.

At the federal level, the Climate Change Adaptation Task Force, co-chaired by the White House Council on Environmental Quality, the Office of Science and Technology Policy, and the National Oceanic and Atmospheric Administration, released its interagency task force progress report on October 28, 2011[19], outlining the federal government's progress in expanding and strengthening the Nation's capacity to better understand, prepare for, and respond to extreme events and other climate change impacts. The report provides an update on actions in key areas of federal adaptation, including: building resilience in local communities, safeguarding critical natural resources such as freshwater, and providing accessible climate information and tools to help decision-makers manage climate risks

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

On November 14, 2008, then-Governor Schwarzenegger signed Executive Order S-13-08, which directed a number of state agencies to address California's vulnerability to sea level rise caused by climate change. This order set in motion several agencies and actions to address the concern of sea level rise.

In addition to addressing projected sea level rise, the California Natural Resources Agency (Resources Agency) was directed to coordinate with local, regional, state, and federal, public and private entities to develop a state Climate Adaptation Strategy. *The California Climate Adaptation Strategy* (December 2009)[20], which summarizes the best-known science on climate change impacts to California, assessed California's vulnerability to the identified impacts, and outlined solutions that can be implemented within and across state agencies to promote resiliency.

The strategy outline is in direct response to Executive Order S-13-08 that specifically asked the Resources Agency to identify how state agencies can respond to rising temperatures, changing precipitation patterns, sea level rise, and extreme natural events. Numerous other state agencies were involved in the creation of the Adaptation Strategy document, including the California Environmental Protection Agency; Transportation Agency (then called Business, Transportation and Housing); Health and Human Services; and the Department of Agriculture. The document is broken down into strategies for different sectors that include: public health; biodiversity and habitat; ocean and coastal resources; water management; agriculture; forestry; and transportation and energy infrastructure. As data continues to be developed and collected, the state's adaptation strategy will be updated to reflect current findings.

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[19] http://www.whitehouse.gov/administration/eop/ceq/initiatives/adaptation

[20] http://www.energy.ca.gov/2009publications/CNRA-1000-2009-027/CNRA-1000-2009-027-F.PDF

The National Academy of Science was directed to prepare a Sea Level Rise Assessment Report[21] to recommend how California should plan for future sea level rise. The report was released in June 2012 and included:

- Relative sea level rise projections for California, Oregon, and Washington taking into account coastal erosion rates, tidal impacts, El Niño and La Niña events, storm surge and land subsidence rates
- Range of uncertainty in selected sea level rise projections
- Synthesis of existing information on projected sea level rise impacts to state infrastructure (such as roads, public facilities, and beaches), natural areas, and coastal and marine ecosystems
- Discussion of future research needs regarding sea level rise for California

In 2010, interim guidance was released by The Coastal Ocean Climate Action Team (CO-CAT) as well as Caltrans as a method to initiate action and discussion of potential risks to the states infrastructure due to projected sea level rise. Subsequently, CO-CAT updated the Sea Level Rise guidance to include information presented in the National Academies Study.

All state agencies that are planning to construct projects in areas vulnerable to future sea level rise are directed to consider a range of sea level rise scenarios for the years 2050 and 2100 to assess project vulnerability and, to the extent feasible, reduce expected risks and increase resiliency to sea level rise. Sea level rise estimates should also be used in conjunction with information on local uplift and subsidence, coastal erosion rates, predicted higher high water levels, storm surge and storm wave data. All projects that have filed a Notice of Preparation as of the date of the Executive Order S-13-08, and/or are programmed for construction funding through 2013, or are routine maintenance projects may, but are not required to, consider these planning guidelines. The Notice of Preparation was filed in 2008 for this project, and construction is scheduled to start in July 2016. Also, the proposed project is outside the coastal zone and direct impacts to transportation facilities due to projected sea level rise are not expected.

Executive Order S-13-08 also directed the Transportation Agency (then called Business, Transportation, and Housing) 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.

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[21] *Sea Level Rise for the Coasts of California, Oregon, and Washington: Past, Present, and Future* (2012) is available at: http://www.nap.edu/catalog.php?record_id=13389.

Currently, Caltrans is assessing 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 effects, Caltrans has not been able to determine what change, if any, may be made to its design standards for its transportation facilities. Once statewide planning scenarios become available, Caltrans will be able review its current design standards to determine what changes, if any, may be warranted to protect the transportation system from sea level rise.

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, increased frequency and intensity of storms and wildfires, rising temperatures, and rising sea levels. Caltrans is an active participant in the efforts being made in response to Executive Order S-13-08 and is mobilizing to be able to respond to the National Academy of Science Report on Sea Level Rise Assessment.

Chapter 5 Comments and Coordination

Early and continuing coordination with the general public and appropriate public agencies is an important part of the environmental process. It helps planners determine the necessary scope of environmental documentation and the level of analysis required and to identify potential impacts, 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, and an extensive public outreach program. This process, known as scoping, allows public agencies and the general public to learn about the project and to provide suggestions on alternatives and the types of impacts to be evaluated.

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

5.1 Coordination Plan

When this project was initiated, the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETEA-LU) required the development of a Coordination Plan for projects where an Environmental Impact Report/Environmental Impact Statement was being prepared. The purpose of the plan was to improve agency and public involvement in the environmental process for transportation projects. The SAFETEA-LU legislation has been replaced with the 2012 passage of Moving Ahead for Progress in the 21st Century Act (MAP-21). Many of the requirements in the SAFETEA-LU legislation pertaining to coordination with other agencies have been carried forward into the MAP-21 requirements. A Coordination Plan was prepared by Caltrans in December 2008 to describe a communication process with participating and cooperating agencies. The following provides an overview of the agency coordination conducted to date.

5.1.1 Notice of Initiation

A project initiation meeting was held on Tuesday, March 4, 2008, from 4:00 p.m. to 8:00 p.m. in the Building Rotunda at the Kern County Administrative Offices at 1115 Truxtun Avenue in Bakersfield. An open house-type format was used to facilitate communication and the exchange of information between the Caltrans project team members and members of the public. The purpose of the meeting was to explain the project and alternatives to the public and interested parties, answer any questions they might have, and gather comments from anyone who had input.

To announce the meeting, Caltrans published a public notice in local newspapers**.** The notice was published in English in *The Bakersfield Californian* on February 12 and 26, 2008. The notice was published in Spanish in *El Popular* on February 29, 2008. In addition, a press release was sent to local media and those individuals that had been identified as interested parties.

A sign-in sheet was provided at the entrance of the meeting, and 383 people signed in. Caltrans received 414 comment cards, emails, or letters from that day through April 4, 2008. In addition, 61 people provided comments to a court reporter at the meeting to record testimony.

5.1.2 Process for Inviting Cooperating/Participating Agencies

Cooperating agencies are governmental agencies that either have approval authority on part of the project (such as issuing a permit) or special expertise with respect to an environmental issue being evaluated in the Environmental Impact Report/ Environmental Impact Statement. Participating agencies can be federal, state, tribal, regional, or local agencies, non-governmental organizations, or private entities that may have an interest in the project. Being a cooperating or participating agency does not mean that the agency supports a project.

On September 18, 2008, Caltrans sent letters of invitation to 10 agencies to become a participating agency and 11 agencies to become a cooperating agency on the project. Unless a federal agency responds or fits one of the following categories, the agency is assumed to be a participating or cooperating agency: (1) it has no jurisdiction or authority for the project; (2) it has no expertise or information relevant to the project; and (3) it does not intend to submit comments on the project. Cooperating and participating agencies are shown in Table 5.1.

Table 5.1 Cooperating and Participating Agencies List

Agency	Contact Person, Title	Accepted Invitation	Declined Invitation	Did not Respond	Agency (yes/no)
Cooperating Agencies					
* U.S. Army Corps of Engineers	Colonel Thomas C. Chapman, District Engineer			X	Yes
* U.S. Fish and Wildlife Service	Susan Moore, Field Supervisor			X	Yes
* U.S. Environmental Protection Agency	Carolyn Mulvihill, Environmental Review Office			X	Yes
Kern County	Craig Pope, Kern County Road Commissioner	X			Yes
City of Bakersfield	Theodore Wright, Thomas Roads Improvement Program Manager	X			Yes
Central Region Water Quality Control Board	Bridget Supple	X			Yes
California Department of Fish and Wildlife[1]	Don Koch, Director		X		No
California Environmental Protection Agency	Linda S. Adams, Secretary		X		No
California Department of Parks and Recreation, Office of Historic Preservation	Carol Roland State Historic Preservation Officer			X	No
San Joaquin Valley Unified Air Pollution Control District, Southern Region	Seyed Sadredin, Air Pollution Control Officer			X	No
State Lands Commission	Paul D. Thayer, Executive Officer			X	No

Table 5.1 Cooperating and Participating Agencies List

Agency	Contact Person, Title	Accepted Invitation	Declined Invitation	Did not Respond	Agency (yes/no)
Participating Agencies					
California Department of Water Resources	Charyce Hatler, Staff Environmental Scientist	X			Yes
California Highway Patrol	Lieutenant Terry Roberts	X			Yes
Native American Heritage Commission	Dave Singleton, Program Analyst	X			Yes
Golden Empire Transit District	Karen H. King, Chief Executive Officer	X			Yes
Kern County Department of Agriculture and Measurement Standards	Ruben J. Arroyo, Agricultural Commissioner	X			Yes
* Federal Transit Administration	Leslie Rogers, Regional Administrator			X	Yes
* U.S. Department of the Interior (Bureau of Reclamation)	Donald R. Glaser, Mid-Pacific Regional Director			X	Yes
* U.S. Department of Agriculture	Carolyn LoFreso, District Conservationist			X	Yes
* California Department of Water Resources	Lester A. Snow, Director			X	Yes
California Department of Food and Agriculture	A.G. Kawamura, Secretary			X	No

It is assumed that agencies with a star (*) will participate as the requested agency because of their expertise or interest in the project.
[1] Effective January 1, 2013, the California Department of Fish and Game changed its name to the California Department of Fish and Wildlife.

Coordination Meeting

A coordination webinar was conducted on August 26, 2009 for those agencies that had accepted the invitation to be a participating or cooperating agency. A webinar is a meeting held on a website; any person using a computer with internet access can attend the meeting. Representatives from the following agencies attended the webinar: California Department of Fish and Wildlife, U.S. Environmental Protection Agency, U.S. Army Corps of Engineers, County of Kern, and the City of Bakersfield.

The purpose of the meeting was to update the attendees on the progress of the project; gain input on the project Purpose and Need; develop the project alternatives; and discuss methodology for the study plans. In addition, the meeting provided an opportunity to identify the permits and approvals needed for project implementation. The permits and approvals needed, as well as the status of these permits is summarized in Tables S.2 and 2.3.

Concerns were raised about the bridges that would cross the Kern River under Alternative A. The crossing of Kern River for Alternatives B and C would provide new bridge structures using the same general alignment used for the Westside Parkway crossing of the Kern River. The bridge structures for Alternative A would be further to the south resulting in impacts to a larger portion of the Kern River. In response to the webinar invitation, the California Department of Fish and Game also provided a written comment letter to Caltrans regarding their outstanding concerns about the project, including potential impacts to wetlands, riparian habitat, compatibility with the applicable conservation plans; and Section 4(f) consideration.

A copy of the letter has been included in Appendix J, Key Correspondence, provided in Volume 2.

5.2 Scoping Process

The scoping process started with widespread notice to government agencies via publication of a Notice of Intent/Notice of Preparation announcing the start of an Environmental Impact Report/Environmental Impact Statement. The Notice of Intent was published in the *Federal Register* on September 19, 2008, in accordance with the National Environmental Policy Act. The Notice of Preparation was filed with the State Clearinghouse on September 19, 2008, in accordance with the California Environmental Quality Act. The State Clearinghouse posts the Notice of Preparation on its website and distributes it to state agencies. In addition, the Notice of Preparation was posted on the Caltrans District 6 website and with the Kern County Clerk/Recorder throughout the public review period (September 19, 2008 to October 20, 2008). A copy of the Notice of Preparation is provided in Appendix K in Volume 2. Comments on the Notice of Intent/Notice of Preparation were received from 29 agencies and included comments on a variety of environmental issues. Table 5.2 provides a summary of the issues raised in the responses to the Notice of Preparation.

5.2.1 Mailings

The Notice of Intent/Notice of Preparation was sent to federal, state, regional, and local government agencies, Native American groups, business groups, and other interested parties on September 18, 2008. These groups were also invited to the scoping meeting on October 2, 2008.

5.2.2 Public Noticing

Advertisements announcing the scoping meeting were published in local newspapers in both English and Spanish. An English advertisement was placed in *The Bakersfield Californian*, and a Spanish advertisement was placed in *El Popular* three weeks before and one week before the public meeting.

5.2.3 Scoping Meetings

Public Scoping Meeting

The public scoping meeting was held on Thursday, October 2, 2008, in the Kern County Administrative Offices Building Rotunda from 4:30 p.m. to 7:30 p.m. The purpose of the meeting was to provide the public with information on the project and alternatives, answer any questions, and gather comments from anyone who had input.

A total of 147 people signed the sign-in sheets. Caltrans received seven comment cards and two handwritten letters at the meeting. Of these, 12 people provided comments to the onsite court reporter. The following issues were raised: preference for a specific alternative, air pollution and noise impacts, concerns about the Kern River Parkway, effects on property values, and neighborhood impacts.

Table 5.2 Centennial Corridor Notice of Preparation Comment Summary Matrix

Comment Letter	Date of Letter	Procedural/ No Technical Comments	Physical Environment							Natural Environment		Social and Economic Environment												
			Geology and Soils	Mineral Resources	Agricultural Soils and Farmlands	Hydrology	Water Quality	Air Quality	Hazardous Waste	Plant and Animal	Waters of the U.S.	Land Use	Socioeconomic and Environmental Justice	Visual Resources	Traffic and Transportation	Noise	Cultural Resources – Historical	Cultural Resources – Archaeo/Paleo	Public Services and Utilities	Energy	Section 4(f)	Fire	Aesthetics	Cumulative Impacts
Federal Agencies																								
Federal Emergency Management Agency	9/22/2008					x																		
US Environmental Protection Agency	10/17/2008	x				x	x	x		x	x		x		x									x
State Agencies																								
State Clearinghouse	9/19/2008	x																						
California Integrated Waste Management Board	9/22/2008	x																						
California Highway Patrol	9/22/2008	x													x									
California Department of Oil, Gas and Geothermal Resources	9/23/2008			x					x															
California Regional Water Quality Control Board	10/7/2008	x																						
Native American Heritage Commission	10/8/2008																	x						
Public Utilities Commission	10/20/2008	x										x			x									
California Department of Fish and Game[1]	10/20/2008					x		x	x	x	x	x			x	x					x	x	x	x
California Transportation Commission	10/31/2008	x																						
California Environmental Protection Agency	11/7/2008	x																						
California Department of Water Resources	11/10/2008					x																		
California State Lands Commission	Undated	x																						
Regional and Local Agencies																								
County of Kern Auditor-Controller-County Clerk	9/22/2008	x																						
County of Kern Dept of Agriculture and Measurement Standards	9/22/2008	x																						

Table 5.2 Centennial Corridor Notice of Preparation Comment Summary Matrix

Comment Letter	Date of Letter	Procedural/ No Technical Comments	Physical Environment							Natural Environment		Social and Economic Environment												
			Geology and Soils	Mineral Resources	Agricultural Soils and Farmlands	Hydrology	Water Quality	Air Quality	Hazardous Waste	Plant and Animal	Waters of the U.S.	Land Use	Socioeconomic and Environmental Justice	Visual Resources	Traffic and Transportation	Noise	Cultural Resources – Historical	Cultural Resources – Archaeo/Paleo	Public Services and Utilities	Energy	Section 4(f)	Fire	Aesthetics	Cumulative Impacts
North of the River Recreation and Park District	9/22/2008																				x			
County of Kern Administrative Office	9/30/2008	x																						
Rosedale - Rio Bravo Water Storage District	10/2/2008	x																						
Kern County Department of Human Services	10/6/2008											x	x											
Kern County Resource Management Agency-Roads Dept	10/8/2008	x																						
City of Bakersfield	10/20/2008	x																						
Kern Water Bank Authority	10/21/2008						x			x														
City of Bakersfield Historic Preservation Commission	11/12/2008	x																						
Golden Empire Transit	9/26/2008	x																						
Businesses and Organizations																								
BNSF Railway	9/29/2008											x												
Westpark Homeowners Association/Luce Forward	10/14/2008											x	x			x							x	
Union Pacific	10/14/2008							x				x			x	x								
Chumash Council of Bakersfield	10/23/2008	x																						

[1] Effective January 1, 2013, the California Department of Fish and Game changed its name to the California Department of Fish and Wildlife

Agency Scoping Meeting

An Agency Scoping Meeting was held on Thursday, October 2, 2008, at the Thomas Roads Improvement Program offices in Bakersfield. The purpose of the meeting was to explain the project and alternatives to agencies, answer any questions they might have, and gather comments from anyone who had input.

Five representatives from the following four agencies were in attendance: Kern County Department of Public Health, Kern County Agricultural Commissioner's Office, California Highway Patrol, and the City of Bakersfield Recreation and Parks Department.

5.3 Consultation and Coordination with Public Agencies

5.3.1 Resource and Regulatory Agencies

Caltrans began Section 7 consultation on November 20, 2007, under the Federal Endangered Species Act with the U.S. Fish and Wildlife Service for the six Thomas Roads Improvement Program projects, which include the Centennial Corridor. The California Department of Fish and Wildlife was included in the coordination process, but it was decided that the project would not require formal consultation pursuant to the California Endangered Species Act because there would be no "take" of endangered species based on the proposed avoidance, mitigation, and minimization measures. Through this consultation process, the San Joaquin Kit Fox Conceptual Strategy for the Thomas Roads Improvement Program was developed. Coordination addressed issues such as an approach for San Joaquin kit fox field surveys (June 2008), potential project-specific and program-level effects of the Thomas Roads Improvement Program (September 2010), and minimization options for project-specific impacts (August 2008 to present).

As part of the agency consultation, the Metropolitan Bakersfield Habitat Conservation Plan Trust Administrator provided written correspondence stating that the Trust Group concurs with the use of the Metropolitan Bakersfield Habitat Conservation Plan for compensatory mitigation required by the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife. The correspondence also stated that payment could occur after approval of the final environmental document. See Appendix J in Volume 2 for the letter.

Formal project-specific Section 7 consultation for the San Joaquin kit fox began with the U.S. Fish and Wildlife Service on April 16, 2013. Based on coordination between Caltrans and U.S. Fish and Wildlife Service, the Biological Assessment evaluated Alternatives A, B and C. The Biological Assessment, submitted as part of the consultation package, was approved as complete by U.S. Fish and Wildlife Service on July 22, 2013. The Biological Opinion from the Service on the effects on the San Joaquin kit fox was issued on December 20, 2013.

5.3.2 Intergovernmental Consultation for Air Quality

Intergovernmental coordination through the Kern Council of Governments Transportation Conformity Working Group began in May 2012 regarding Clean Air Act conformity requirements. The agencies involved included the Kern Council of Governments, Caltrans, the Environmental Protection Agency, the San Joaquin Valley Pollution Control District, and the Federal Highway Administration.

The Transportation Conformity Working Group recommended preparing a qualitative analysis of the Centennial Corridor project alternatives. A qualitative analysis was prepared per the Environmental Protection Agency guidance for qualitative hot spot analyses. The protocol was followed for the qualitative analysis that was completed for particulate matter for existing (2008) conditions and the No-Build Alternative and all three build alternatives for the 2038 design year. The results were shared with the Transportation Conformity Working Group on September 19, 2013 as part of the review of the environmental document.

5.3.3 Native American Heritage Commission and Associated Cultural Resources Consultation

Through preparation of the technical studies for cultural resources, a request was made to the Native American Heritage Commission for a review of the Sacred Lands Inventory to determine if any known cultural properties are present within or adjacent to the Area of Potential Effects. The Native American Heritage Commission responded on June 21, 2007, stating that no Native American cultural resources are known to exist within or next to the Area of Potential Effects. In addition, the Native American Heritage Commission provided a list of individuals/organizations that may have knowledge of cultural resources in the project area. The 12 parties listed on the Native American Heritage Commission contacts list and 10 additional individuals identified by Caltrans were all contacted by certified letter on July 30, 2007, or September 25, 2007. The letters were followed by emails and/or telephone calls to each individual to ensure that the contacts received the original letter and had a chance to respond in time.

Several responses were received, including three letters from individuals requesting that additional information be sent to them about the project as it continues. On December 21, 2011, the three individuals who requested additional information were sent an updated informational letter describing the Centennial Corridor project and requesting comments and any additional information of which they might be aware. No additional input has been received.

In addition to coordination with the Native American Heritage Commission, letters informing interested parties of the project were sent to area planning agencies, local governments, historical societies, and museums in August 2009 to solicit input on cultural resources.

Upon completion of the cultural resources studies, copies of the *Historic Property Survey Report*—which includes the Archaeological Survey Report, the Historic

Resources Evaluation Report, the Extended Phase I (Geoarchaeological Study) and the California Historic Bridge Inventory Sheet—were sent for review to the following consulting parties:

- Kudzubitchwanap Palap Tribe
- Eshom Valley Band of Indians
- Native American Heritage Preservation Council
- Tule River Indian Tribe
- Carol Pulido, Frazier Park
- Santa Rosa Rancheria
- Kawaiisu Tribe
- Kern Valley Indian Council
- Tejon Indian Tribe
- Kitanemuk and Yowlumne Tejon Indians
- Yokuts, Tubatulabal
- Chumash Council of Bakersfield
- Tubatulabals of Kern Valley
- County of Kern
- City of Bakersfield
- State Historic Preservation Officer

A 30-day comment period began on February 15, 2013. This review coincided with Caltrans initiation of Section 106 consultation with the State Historic Preservation Officer. On April 15, 2013, the State Historic Preservation Officer concurred that four properties (the Lester H. Houchin residence, the Rancho Vista subdivision, the property at 3904 Marsha Street, and the Friant-Kern Canal) within the Area of Potential Effects are eligible for the National Register of Historic Places. Refer to Appendix J of Volume 2, Key Correspondence, for these letters.

Following the concurrence from the State Historic Preservation Officer on the Historic Property Survey Report, a Finding of Effect on historic properties was prepared and submitted to the State Historic Preservation Officer and other consulting parties for review in March 2014. Comments were received from the State Historic Preservation Officer on April 10, 2014. Consultation with the State Historic Preservation Officer to address the identification efforts with regards to potential buried archaeological sites and adverse effects on Rancho Vista Historic District is ongoing. A Memorandum of Agreement outlining measures establishing procedures for archaeological treatment plans and data recovery and ways to avoid or minimize harm to the Rancho Vista Historic District, depending on the Alternative selected, will be completed during the public comment period on the Draft EIR/EIS.

5.3.4 Coordination with California Department of Parks and Recreation

Section 6(f)(3) of the Land and Water Conservation Fund Act (16 U.S. Code §4601-4) contains provisions to protect federal investments in park and recreation properties and the quality of those assisted properties. As discussed in Section 3.1.1.3, Parks and Recreation, two Land and Water Conservation Fund grants were used for improvements at Yokuts Park. Therefore, this area would be subject to Section 6(f) anti-conversion requirements. Caltrans coordinated with the California Department of Parks and Recreation to demonstrate that there would be no conversion or impacts to property improved using Land and Water Conservation Fund grants.

5.3.5 Coordination with the City of Bakersfield on Parks

The City of Bakersfield and Caltrans met with Diane Hoover of the City Parks and Recreation Department on two occasions (January 26, and March 21, 2012) to discuss potential construction impacts from Alternatives A, B, and C on several city park facilities. These facilities included Centennial Park, Saunders Park, and the Kern River Parkway (Par Course). Potential impacts and proposed mitigation measures were discussed at the meetings. Based on City/Caltrans coordination, the City Parks Director approved the Draft Concept Landscape Plan for Saunders Park if Alternative C were to be selected; approved the mitigation measures proposed for the Kern River Parkway (Par Course) if Alternative A were to be selected; and approved the avoidance alternative (Alternative B) for Centennial Park. The proposed Draft Concept Landscape Plan and mitigation measures for each city park are discussed in the Section 4(f) analysis (Appendix B in Volume 2, Section 7.0).

During the above meetings, the Parks Director confirmed that Yokuts Park received grant funding from the Land and Water Conservation Fund in March 1990 to develop group picnic facilities. City Resolutions 43-89 and 32-90 approved the application for Land and Water Conservation Funds. A Section 6(f)(3) Boundary Map outlining the area for use of the funds was also developed. Section 6(f) includes an anti-conversion requirement that precludes the future conversion of any land that used Land and Water Conservation funding for improvements without approval from the Secretary of the Interior. The City concurred with the Section 6(f) funding in a letter dated May 2, 2012. Additional information is provided in a Kern River Parkway Acreage Estimate and Section 6(f) Funding Technical Memorandum, dated May 1, 2012 (this memorandum is provided in Appendix B in Volume 2, *Section 4(f) Evaluation*).

Caltrans also met with Don Anderson of the City Real Estate Department to discuss real estate property acquisitions along Westside Parkway and the Kern River near Mohawk Street Bridge. Mr. Anderson confirmed that the property was acquired for the sole purpose of building Westside Parkway facilities and not for parkland or other uses. He confirmed the property boundaries purchased by the City and confirmed that other parcels (e.g., Wanamaker property) remained in private ownership.

5.3.6 High-Speed Rail Authority

City of Bakersfield and Caltrans staff members have met with representatives from the California High-Speed Rail Authority on the design compatibility of the

Centennial Corridor and the High-Speed Rail. Copies of the plans for the Centennial Corridor and the High-Speed Rail alignment were exchanged because the improvements would be close to each other in the proximity of State Route 99 where Alternative C turns west; however, they would not conflict. This coordination effort started in early 2009 and has extended through 2012.

In addition, staff members from Caltrans and the City of Bakersfield have attended four California High-Speed Rail Technical Working Group meetings from June 2009 to April 2011.

5.3.7 Emergency Service Providers

Coordination occurred with the local emergency service providers. On March 6, 2012, staff with the Thomas Roads Improvement Program met with the City of Bakersfield Fire Department and Police Department to discuss potential concerns and review the modified access with each alternative. A similar meeting was held on March 13, 2012, with the County of Kern Fire Department and Sheriff Department. No specific concerns were identified. Coordination with the emergency service providers as part of the Transportation Management Plan would address closures and detours during construction (see Standard Condition SC-CI-1 in Section 3.6 Construction Impacts).

5.3.8 U.S. Department of Agriculture

There was coordination with the U.S. Department of Agriculture regarding the impacts to farmland from the improvements at the Stockdale Highway/State Route 43 (Enos Lane) intersection. Input from the Department of Agriculture was formally received on the Farmland Conversion Impact Rating Form. Due to the minimal impacts on farmland, evaluation of alternatives designs to provide greater protection of farmland was not required.

5.4 Public Participation

Public participation has been an important part of this project. A series of meetings, interviews, and other outreach methods with affected property owners, community groups, and interested agencies has been carried out throughout the project development period and will continue as the project moves forward. Representatives from the City of Bakersfield, Caltrans, the Thomas Roads Improvement Program, and the project consultant team have presented project information and answered questions at numerous public meetings.

Several methods were used to inform the public of meetings, including newspaper notices and invitations sent to affected property owners and the community.

There was a consistent set of issues raised throughout the public participation process. These issues were raised at the neighborhood meetings, as well as in the various focus group meetings, and individual interviews. The concerns include:

- Social impacts and impacts on the quality of life after the project is constructed.

- Objection to removal of homes.
- Concern regarding previous statements by officials indicating a transportation facility would not be located in the Westpark neighborhood.
- Impacts to community facilities (churches, schools, parks).
- Loss of affordable housing.
- Air pollution/health concerns.
- Impact to property values.
- Noise impacts.
- Traffic impacts.
- Possible impacts to the natural environment, including the Kern River.
- Impacts to historic resources.
- Visual impacts.

5.4.1 Neighborhood Meetings

Neighborhood meetings, important to the community impact evaluation process, were held in the vicinity of each of the build alternatives. The purpose of the neighborhood meetings was to explain the project and alternatives to the public and interested parties, answer questions, and gather public input. An open house-type format was used to allow the public to ask questions of the project team members and give input about project-related concerns.

Three neighborhood meetings were held in the project area. At each neighborhood meeting, it was announced that a one-on-one meeting or a focus group meeting could be requested (these types of meetings are discussed later in this section). Meeting announcements were mailed out in both English and Spanish. All meeting materials (displays and handouts) were available in both languages. Spanish-speaking staff was on hand at all neighborhood meetings. Comment cards, which could be turned in at the meeting or mailed in later, were handed out at the meeting.

The first neighborhood meeting was held on Thursday, May 22, 2008, at the Harris Elementary School Cafeteria/Multi-Purpose Room at 4110 Garnsey Lane in Bakersfield. Two identical sessions of the meeting, each lasting about 90 minutes, were held: one at 4:30 p.m. and the other at 7:30 p.m. At the first session, 235 people signed in. At the second session, 141 people signed in. A handout with a project questionnaire/survey asking about the neighborhood was available at each session. Caltrans received 60 completed project questionnaires.

The second neighborhood meeting was held on Tuesday, July 21, 2008, at 4:30 p.m. at the McKinley Elementary School Multi-Purpose Room at 601 Fourth Street in Bakersfield. Eighty-three people signed in. The same project questionnaire/survey used at the May 22, 2008, meeting was available. Caltrans received seven completed project questionnaires.

The third neighborhood meeting was held on Thursday, August 21, 2008, at 4:00 p.m. at the McKinley Elementary School Multi-Purpose Room at 601 Fourth Street in Bakersfield. Eighty-two people signed in. The same project questionnaire/survey used at the May 22, 2008, meeting was available. Caltrans received 11 completed project questionnaires.

A total of 78 neighborhood questionnaire/surveys and 414 written comments were received as a result of all the meetings held. Comments ranged from requests for maps and documents to requests to be added to the project mailing list to statements about preferred alternatives. Issues raised in the comments included impacts to seniors, concerns about the environment, social impact/quality of life, impacts to historic resources, and loss of homes.

5.4.2 Interviews

Community-based Organizations Interviews

Two community-based organizations—First United Methodist Church of Bakersfield and Stockdale Christian School (located at the First Assembly of God Church)—participated in interviews conducted by the project team between July 2008 and September 2008. These organizations expressed concerns with Alternatives A and B due to their close proximity to these two alternatives.

One-on-One Interviews

Residents of the project area were offered the opportunity to take part in one-on-one interviews with project planners. Residents taking part in the interview process were asked a series of 20 questions. The goal of the interviews was to gain input from individuals who live in the neighborhoods along the Centennial Corridor route who could be affected by the project. The data collected were used to assess the community identity and how community members identified their neighborhoods. Respondents were asked questions such as the length of time they had lived in the neighborhood, the boundaries of their neighborhood, how they viewed the quality of life in the neighborhood, and about organizations that represent or are active in their neighborhood. The full questionnaire is provided in the *Community Impact Assessment* (September 2013); the results are summarized in this document in the discussion of Community Character and Cohesion, Section 3.1.4.1.

A total of 49 interviews were conducted from July 2008 through September 2008. While the opportunity to take part in the one-on-one interviews was offered at neighborhood meetings conducted for each alternative. Most of the interviewed individuals were from the Westpark neighborhood.

5.4.3 Focus Groups

Focus group meetings were small group meetings generally held at people’s homes and included the resident and neighbors. Anyone could request to host a focus group meeting. Nine focus-group meetings with a total of 146 participants were held during the course of the planning process. Meetings were tailored to the issues of concern for each of the focus groups. These meetings allowed attendees to ask questions and

interact with the project team. Eight meetings were held from late July 2008 to mid-August 2008; an additional meeting was held in October 2008.

5.4.4 Business Community Outreach

Outreach targeting the business community included a public information meeting on January 27, 2009 and a March 2009 business survey. About 40 businesses responded to the survey. Common concerns noted by survey respondents were that a neighborhood-serving business or church, if relocated, would not be able to serve the same clientele or membership. Several business survey comments noted concerns about the acquisition process; decrease in the City tax base; streets; and entry/exit of commercial establishments.

5.4.5 Citizens' Advisory Group Meetings

Since late 2008, nine Citizens' Advisory Group meetings have been held. The Citizens' Advisory Group is made up of a maximum of nine members, plus three officers. The nine members include three members from each of the following areas: east of State Route 99; west of State Route 99; and service representatives (includes emergency services, school board or district, and transit/bicycle authority).

The objective of the Citizens' Advisory Group is to keep Caltrans informed of the feelings in the community regarding the project. The Citizens' Advisory Group serves as a voice for interested parties that are represented by group members, but the group is not a decision-making body. Members of the Citizen's Advisory Group provide input to Caltrans, represent their community interests, and act as liaisons to their neighborhoods.

5.4.6 Neighborhood Surveys

Neighborhood surveys were used to solicit input, comments, and suggestions from the larger community. From March 18 to March 24, 2009, about 16,000 surveys were mailed to residents in the project area. Questions on the survey were the same as those presented in the one-on-one interviews conducted in individuals' homes as described above. This was done to gather consistent information from all neighborhoods that might be directly affected by the project.

The surveys were made available in English and Spanish. Recipients were asked to complete and return surveys within 21 days; the return postage was pre-paid. About 920 surveys were returned by members of the public; most (34 percent) came from the Westpark neighborhood.

The survey results, in general, indicated that members of the public see the need for the project, but most do not want the project to go through their own neighborhood for various reasons, including quality of life; hardship for displaced elderly people and impacts to the retired community; effect on the ability to walk to local retail uses and community facilities; increased noise and localized air quality emissions; and decreased property values.

5.4.7 Public Information Meeting/Open House

A Public Information Meeting/Open House was held on May 11, 2011, from 4:30 p.m. to 7:30 p.m. at the Kern County Administrative Offices Building Rotunda at 1115 Truxtun Avenue in Bakersfield. The meeting format was an open house, where the public was invited to attend at any time during the three-hour period. One hundred and ninety-seven people signed in. Several display boards, including the project alternatives under consideration, were placed throughout the room for attendees to view, and attendees were able to interact with project representatives.

Caltrans received 71 comment cards submitted at the meeting. Three additional comment cards were received after the meeting/open house. Many of the comment cards specifically stated the following about the project: a preferred alternative and concerns on property values; reduced neighborhood feel and amenities; and increased noise with elevated segments.

5.4.8 Public Information Meeting/Section 4(f) Evaluation

A Public Information Meeting was held on December 6, 2012 from 4:00 p.m. to 7:00 p.m. to provide the community an update on the progress of the environmental studies and to present the findings of the Section 4(f) evaluation, which was the basis for identifying a preliminary preferred alternative.

A newsletter, which included a notice of the public meeting, was sent to 11,570 property owners and residents in the project study area. The mailing area included properties within 300 feet of the project's right-of-way, from Interstate 5 to Cottonwood Road. The newsletter was also sent to all property owners and residents of the Westpark neighborhood, encompassed by State Route 99, Stockdale Highway, and California Avenue.

The meeting was noticed in *The Bakersfield Californian* and in the Spanish language newspaper *El Popular* on November 23, 2012. The meeting was held at the Kern County Administrative Offices. About 500 people attended the meeting (459 signed in). Forty-six comment forms were filled out and submitted at the meeting.

Based on contact information provided at the meeting and in the newsletter, well over 100 people have contacted Caltrans and the Thomas Roads Improvements Program via email, phone call, and visits to the Thomas Roads Improvements Program office since the meeting.

Most of the comments received cited property inquiries or other right-of-way questions. Concerns were raised about the impacts that Alternative B would have on the Westpark neighborhood, including effects on community cohesion, increased air emissions and noise that would be experienced by remaining residents, and aesthetic impacts.

5.4.9 Public Review of the Draft Environmental Document

This draft environmental document will be circulated for a 60-day review by agencies and members of the public. During the public review period, an open house will be

held to receive comments from the public regarding the project. Upon completion of the public review period, acknowledgements or written responses to all substantive environmental issues raised will be prepared and made part of the final environmental document for consideration by decision-makers for the project. The final environmental document will also be available for public review.

Chapter 6 List of Preparers

6.1 California Department of Transportation

This document was prepared by the following Caltrans Central Region staff:

Allam Alhabaly, Transportation Engineer. Bachelor of Science, California State University, Fresno, School of Engineering; 11 years in the environmental engineering unit. Contribution: Oversight review of the Noise Study Report.

Bryan Apper, Senior Environmental Planner. Master of Arts, Environmental Planning, Consortium of the California State University, Long Beach; 33 years of environmental and transportation planning experience. Contribution: Oversight review of the environmental document, the Community Impact Assessment, and the Section 4(f) Report.

Jeanne Day Binning, Branch Chief/Senior Environmental Planner. Doctor of Philosophy, Anthropology, University of California, Riverside; more than 40 years of cultural resources management experience in the Great Basin and California. Contribution: Oversight review of the Archaeological Survey Report, the Extended Phase I Report, and the Historical Resources Evaluation Report.

Chuck Cesena, Senior Environmental Planner (Natural Sciences). Bachelor of Arts, Environmental Studies, University of California, Santa Barbara; 29 years of biology and environmental planning experience. Contribution: Oversight review of the Natural Environment Study and the Biological Assessment.

Brad Cole, Senior Landscape Architect (CA License Number 4518). Bachelor of Science, Landscape Architecture, California Polytechnic University, San Luis Obispo; 12 years of landscape architecture experience. Contribution: Oversight review of the Visual Impact Assessment.

Rajeev Dwivedi, Associate Engineering Geologist. Doctor of Philosophy, Environmental Engineering, Oklahoma State University, Stillwater; 19 years of environmental technical studies experience. Contribution: Oversight review of the Water Quality Report.

Kevin Gallo, Landscape Architect (License Number 5538). Bachelor of Landscape Architecture, California Polytechnic State University, San Luis Obispo; 6 years of landscape architecture experience. Contribution: Oversight review of the Visual Impact Assessment.

Marie (Terry) Goewert, Environmental Planner (Air Quality Specialist). Bachelor of Science, Foods and Nutrition, Colorado State University; 13 years of

environmental compliance experience and 7 years of environmental planning experience. Contribution: Oversight review of Air Quality Study Report.

Srikanth Gopalkrishnarao, Professional Engineer: Hydraulics Engineer (Registered Civil Engineer). Masters in Environmental Engineering, South Dakota State University; 12 years as Hydraulics Engineer and 5 years as Civil/ Environmental Engineer. Contribution: Hydraulics report review; oversight review of the Floodplain Evaluation.

Peter Hansen, Engineering Geologist, Professional Geologist. Bachelor of Science, Geology, California State University, Fresno; 12 years of paleontology/ geology experience. Contribution: Oversight review of the Paleontological Evaluation Report.

Richard Helgeson, Professional Engineer, Senior Transportation Engineer. Bachelor of Science, Civil Engineering, California State University, Fresno; 16 years of civil engineering experience; 14 years of Transportation Engineering experience. Contribution: Engineering design oversight.

Kelly J. Hobbs, Senior Environmental Planner. Bachelor of Arts, History, California State University, Fresno; 16 years experience in California history; 13 years of experience in environmental planning management. Contribution: Oversight review of the environmental document.

Krista Kiaha, Associate Environmental Planner. Master of Science, Anthropology, Idaho State University; 15 years of cultural resources experience. Contribution: Oversight review of the Archaeological Survey Report and the Extended Phase I Report.

Albert Lee, Senior Transportation Engineer. Master of Science, Civil Engineering, California State University, Fresno; 27 years of civil engineering experience. Contribution: Oversight review of the Traffic Study.

Steven McDonald, Senior Transportation Engineer, RCE; Bachelor of Science, Civil Engineering, California State University of Fresno; 19 years of experience in transportation engineering. Contribution: Traffic forecasting and operations.

Chanin McKeighen, Senior Right of Way Agent. Master of Arts, International Relations, California State University, Fresno; 12 years of experience with the California Department of Transportation, Right of Way. Contribution: Oversight review of the Relocation Impact Report and the Right-of-Way Data Sheets.

Frank Meraz, Senior Environmental Planner. Bachelor of Science, Biology, California State University, Fresno; 8 years of biology experience. Contribution: Oversight review of the Natural Environment Study.

Kristen Merriman, Associate Environmental Planner. B.A., Anthropology, California State University, Fresno; 13 years of environmental impact assessment experience. Contribution: Quality review.

Marissa L. Nishikawa, Professional Engineer, Caltrans National Pollutant Discharge Elimination System/Southwest Coordinator. Bachelor of Science, California State University, Fresno; 21 years of civil engineering experience. Contribution: Storm Water Quality and National Pollutant Discharge Elimination System.

Andrew Pochwatka, Professional Engineer, Caltrans National Pollutant Discharge Elimination System, Storm Water Coordinator. Bachelor of Science, Civil Engineering, California State University, Sacramento; 9 years of highway design experience and 6 years of stormwater experience. Contribution: Storm Water Data Report.

Richard Putler, Associate Environmental Planner. Master of Arts, City and Regional Planning, California State University, Fresno; 12 years of environmental planning experience. Contribution: Oversight review of the environmental documentation, the Community Impact Assessment, and the Section 4(f) properties report.

Ken J. Romero, Senior Transportation Engineer. Bachelor of Science, Civil Engineering, California State University, Fresno; 7 years of environmental technical studies experience. Contribution: Oversight review of the Noise Study Reports, Air Quality Reports, and Water Quality Reports.

Patricia Scrivner, Professional Engineer, Transportation Engineer. Bachelor of Science, Civil Engineering, California State University, Fresno; 15 years of transportation design experience. Contribution: Design oversight review.

Jane Sellers, Research Writer. Bachelor of Arts, Journalism, California State University, Fresno; more than 25 years of writing/editing experience. Contribution: Edited the environmental document during Quality Assurance/Quality Control review.

Lea Spann, Associate Environmental Planner. Bachelor of Arts, Environmental Studies, University of California, Santa Barbara; 12 years of hazardous waste/materials experience and 7 years of environmental planning experience. Contribution: Oversight review of the Initial Site Assessment.

Mary (Jeannie) Stevens, Transportation Engineer. Bachelor of Science, Civil Engineering, California State University, Fresno; 20 years of experience. Contribution: Oversight project management.

Philip Vallejo, Associate Environmental Planner. Bachelor of Arts, History, California State University, Fresno; 7 years of experience in architectural

history field. Contribution: Oversight review of the Historical Resources Evaluation Report.

Juergen Vespermann, Senior Environmental Planner. Engineering Degree, Fachhochschule Muenster, Germany; 23 years of transportation planning/environmental planning experience. Contribution: Oversight review of hazardous waste and paleontological resources reports.

Charles Walbridge, Associate Environmental Planner. Bachelor of Science, Biological Sciences, California State University, Fresno; 12 years of environmental planning experience. Contribution: Oversight review of the Natural Environment Study.

Koko Widyatmoko, Professional Engineer, Transportation Engineer. Bachelor of Science, California State University, Fresno, School of Engineering; 12 years of experience in transportation engineering. Contribution: Oversight review of the Traffic Study Report.

Sam Wong, Senior Hydraulics Engineer, MSCE. University of Arkansas, Fayetteville, Arkansas; 15 years of hydrology and hydraulics design experience. Contribution: Oversight review of the Floodplain Evaluation.

6.2 Consultant Staff

AECOM

Stephanie Coppeto, Wildlife Biologist. Master of Science, Ecology, University of California, Davis; 8 years of experience in wildlife studies, project management/coordination, and Endangered Species Act consultation. Contribution: Performed San Joaquin kit fox den and sign surveys.

Cindy Davis, Senior Regulatory Specialist. Bachelor of Science, Biological Conservation, California State University, Sacramento; 16 years of experience as a regulatory specialist and project manager on projects addressing restoration; flood control and water storage; infrastructure; residential, commercial, and government buildings; and transportation. Contribution: Reviewed the San Joaquin kit fox information.

Leo Edson, Senior Wildlife Biologist. Bachelor of Science, Biological Sciences, California State University, Chico; 22 years of experience in environmental compliance and biological studies for transportation, energy, water, and residential development projects. Contribution: Reviewed the biological resources section of the Natural Environment Study.

BonTerra Consulting

Josephine Alido, American Institute of Certified Planners, Project Manager. Master of Planning, University of Southern California; 24 years of experience in

environmental planning throughout Southern California. Contribution: Assisted in the preparation of the environmental document.

Julia R. Black, Technical Writer. Bachelor of Arts, English, California State University, Fullerton; 11 years of writing and editing experience. Contribution: Performed technical editing of the Environmental Impact Report/Environmental Impact Statement, the Natural Environment Study, the Jurisdictional Delineation Report, and the Archaeological Survey Report.

Kathleen Brady, American Institute of Certified Planners, Principal of Technical Services. Bachelor of Science, Sociology, University of California, Riverside; 32 years of environmental planning experience. Contribution: Principal-in-Charge, managed the preparation of the environmental document.

Julie A. Cho, Project Manager. Master of Business Administration, University of California, Irvine; Master of Urban and Regional Planning, University of California, Irvine; 19 years of experience in the preparation and management of environmental compliance documents. Contribution: Assisted in the preparation of the environmental document.

Brian Daniels, Ornithologist. Bachelor of Science, Zoology, California State University, Long Beach; 36 years of experience in biological resources, specializing in ornithology. Contribution: Completed Swainson's hawk surveys.

Jade Dean, Geographic Information Systems Technician. Bachelor of Arts, Geography, California State University, Long Beach; 3 years of experience in Geographic Information Systems mapping. Contribution: Prepared figures for Geographic Information Systems information used in the Environmental Impact Report/ Environmental Impact Statement, the Natural Environment Study, and the Jurisdictional Delineation.

Pamela De Vries, Botanist. Master of Science, Biology, California State University, Fullerton; 21 years of experience in biology and restoration ecology. Contribution: General plant surveys, special-status plant habitat assessment, vegetation mapping, and focused special-status plant survey.

Andrea Edwards, Botanist. Bachelor of Science, Biology and Anthropology, Trinity University, San Antonio, Texas; 11 years of experience in plant biology, biological resource evaluations, natural resource planning, and habitat restoration. Contribution: Assisted with special-status plant surveys.

Johnnie F. Garcia, Geographic Information Systems Specialist. Bachelor of Arts, Geography, University of California, Santa Barbara; 4 years of experience in Geographic Information Systems mapping. Contribution: Prepared figures and coordinated with applicable agencies for Geographic Information Systems information used in the environmental document, the Natural Environment Study, the Jurisdictional Delineation, and the Archaeological Survey Report.

Otto Gasser, Retired Professor (Cal Poly Pomona)/Biological Field Assistant. Ed.d Educational Psychology, University of California, Los Angeles; 10 years experience assisting in botanical field surveys including rare plant surveys. Contribution: General plant survey, habitat assessment, vegetation mapping, and focused special-status plant survey.

Amber Oneal Heredia, Senior Project Manager/Ecologist. Master of Science, Biology, University of California, Riverside; 14 years experience in ecology and environmental documentation. Contribution: Prepared the biological resources assessment sections of the environmental document and prepared the Natural Environment Study.

Albert Knight, Project Archaeologist; Bachelor of Arts, Anthropology, University of California, Santa Barbara; 25 years of experience in archaeological research, field work, monitoring, and report writing. Contribution: Assisted in cultural resources field surveys for the project.

Sheryl A. Kristal, Senior Word Processor (Microsoft Office Specialist). General Studies, Golden West College; 8 years of word processing experience. Contribution: Formatted the environmental document, the Natural Environment Study, the Jurisdictional Delineation, the Archaeological Survey Report.

Megan Larum, Environmental Planner. Bachelor of Science, Environmental Policy Analysis and Planning, University of California, Davis; 4 years of environmental planning experience. Contribution: Assisted in the preparation of the environmental document.

Sandra Leatherman, Botanist. Bachelor of Arts, Biology, California State University, Fullerton; 21 years of experience in plant biology, mitigation monitoring, and the performance of biological surveys, restoration studies, and habitat evaluations. Contribution: Assisted with special-status plant surveys.

Patrick Maxon, Registered Professional Archaeologist, Director of Cultural Resources. Master of Arts, Anthropology, California State University, Fullerton; 18 years of cultural resources management experience. Contribution: Preparation of the Archaeological Survey Report, Historic Property Survey Report, and the Segments 2 and 3 Memoranda.

Gary A. Medeiros, Associate Principal, Regulatory Services. Bachelor of Arts, Social Ecology, University of California, Irvine; 31 years of experience in natural resources policy planning, regulatory permitting, and permit compliance. Contribution: Conducted the Jurisdictional Delineation.

Lindsay Messett, Wildlife Biologist. Bachelor of Science, Ecology and Systematic Biology (Concentration: Wildlife Biology), California State Polytechnic University, San Luis Obispo; 12 years of experience in wildlife biology.

Contribution: Conducted surveys for burrowing owl burrow and potential kit fox dens along Stockdale Highway and State Route 43.

Jason Mintzer, Wildlife Biologist. Master of Arts, Education, Vanguard University, Costa Mesa, California; California Biology/Life Science Teaching Credential, California Commission on Teacher Credentialing; 9 years of experience in herpetology. Contribution: Assisted with the jurisdictional delineation.

Kimberly Oldehoeft, Wildlife Biologist. Master of Science, Biology: Behavior and Conservation, California State University, Long Beach; 11 years of experience in wildlife biology and conservation biology. Contribution: Conducted burrowing owl surveys and assisted with special-status plant surveys.

Allison Rudalevige, Ecologist and Regulatory Technician. Master of Science, Biology, University of California, Riverside; 8 years of experience in biological and jurisdictional resources. Contribution: Completed burrowing owl surveys; assisted in the preparation of biological resources assessment sections of the environmental document; completed the jurisdictional delineation survey and prepared the Jurisdictional Delineation Report; and assisted in the preparation of the Natural Environment Study.

Diaz Yourman & Associates

Matt Dennerline, Geotechnical Project Engineer. Bachelor of Science, Carnegie Mellon University; 9 years of experience in geotechnical engineering. Contribution: Prepared Preliminary Geotechnical Design Report.

ERM

John Cavanaugh, Professional Geologist, Partner. Bachelor of Science, Geological Sciences, California State University, Hayward; 15 years of experience in the environmental consulting industry for various private and public sectors, particularly transportation, oil and gas, and semiconductor. Contribution: Reviewed the Initial Site Assessment.

John Moe, Professional Engineer, Environmental Engineer. Master of Science, University of San Francisco; over 30 years of experience in the field of environmental engineering and science. Contribution: Reviewed the Initial Site Assessment.

Anna Morgan, Environmental Engineer. Master of Science, University of California, Irvine; 13 years of experience in the field of environmental science and engineering. Contribution: Conducted the Initial Site Assessment.

HNTB

Stacey Benningfield, Associate Vice President. 30 years of experience in Environmental and Transportation Planning. Contribution: Visual Impact Assessment analysis.

Charl Everson, American Institute of Certified Planners, Planner. Master of Arts, Urban and Regional Planning, Portland State University; 10 years of experience in transportation, environmental, and land use planning. Contribution: Visual Impact Assessment analysis.

Brad Peel, AICP, Chief Planner. Master of Science, Community and Regional Planning, University of Texas, Austin; 21 years of experience in environmental and transportation planning. Contribution: Visual Impact Analysis.

JRP Historical, LLC

Polly Allen, Architectural Historian. Master of Science, Historic Preservation, Columbia University; 3 years experience in completing Section 106 reports. Contribution: Conducted the field survey and research, and prepared building descriptions and evaluations for the Historic Resources Evaluation Report.

Joseph Freeman, Historian. Master of Arts, History, California State University, Riverside; 4 years of experience in completing Section 106 reports. Contribution: Conducted the field survey and research, prepared building descriptions and evaluations, and contributed to the historic context for the Historic Resources Evaluation Report.

Rand F. Herbert, Principal/Partner. Master of Arts in Teaching, History, University of California, Davis; 34 years of cultural resource management experience. Contribution: Consulted on the development of the architectural Area of Potential Effects and provided overall guidance and edited the Historic Resources Evaluation Report.

Scott Miltenberger, Historian. Doctor of Philosophy, History, University of California, Davis; 5 years of experience in completing Section 106 reports. Contribution: Contributed to the historic context for the Historic Resources Evaluation Report.

Heather Norby, Historian. Master of Arts, History, University of California, Berkeley; 3 years experience in completing Section 106 reports. Contribution: Conducted the field survey and research, prepared building descriptions and evaluations, and contributed to the historic context for the Historic Resources Evaluation Report.

Toni Webb, Architectural Historian. Bachelor of Fine Arts, Historic Preservation, Savannah College of Art and Design; 12 years of experience in historic preservation/public history. Contribution: Project Manager/Lead Historian for the Historic Resources Evaluation Report; directed research, field surveys, data management and graphics production; prepared the contextual statement and evaluations; and conducted fieldwork, research and prepared building descriptions and evaluations.

Overland, Pacific & Cutler, Inc.

Mia Garcia, Senior Analyst. Bachelor of Science, Computer Science; University of Redlands; 3 years experience in technical writing and 15 years of Information Technology and database administration. Contribution: Edited the Relocation Impact Report.

Hutch Goodman, Project Manager; 13 years of experience drafting National Environmental Policy Act/California Environmental Quality Act documents. Contribution: Quality assurance/quality control of Relocation Impact Report.

Alfredo Jacquez, Senior Consultant. 8 years experience in right-of-way acquisition and relocation for residential and commercial projects; cost estimation and design coordination. Contribution: Co-author of the Relocation Impact Report.

Chris La Bonte, Project Manager. Bachelor of Arts, Ancient Languages; Wheaton College, Wheaton, Illinois; 6 years of experience in right-of-way acquisition, cost estimation and design coordination. Contribution: Co-author of the Relocation Impact Report.

Mark La Bonte, Principal/Vice President, SR/WA. Bachelor of Arts, Anthropology; University of California, Berkeley; 24 years of experience in right-of-way acquisition and relocation for residential and commercial projects. Contribution: Quality assurance/quality control of Relocation Impact Report.

Elise McCollister, Senior Project Analyst. Bachelor of Arts, English; University of California, Riverside; 5 years experience in environmental planning and 1 year experience in right-of-way acquisition and relocation. Contribution: Primary author of Relocation Impact Report.

Paleo Environmental Associates, Inc.

E. Bruce Lander, Principal Investigator, Senior Vertebrate Paleontologist. Doctor of Philosophy, Paleontology, University of California, Berkeley; 42 years of experience completing paleontological research and reviews. Contribution: Completed the Paleontological Evaluation Report.

Parsons

Nasrin Behmanesh, PhD, Principal Air Quality and Climate Change Specialist. Doctor of Philosophy in Chemical Engineering, University of California, Los Angeles; 21 years of experience in air quality and health risk assessment. Contribution: Lead specialist; conducted analysis and prepared Air Quality Study Report and the air quality and climate change sections of the environmental document.

Greg J. Berg, Senior Scientist, Noise and Vibration. Bachelor of Arts, Acoustics, Columbia College, Chicago; 7 years of experience in noise control and mitigation. Contribution: Noise measurements, noise barrier design, and writing and reviewing sections of the Noise Study Report.

Richard Bottcher, Professional Engineer, Regional Storm Water Manager. Masters of Engineering, Cornell University, New York; 28 years of storm water management experience. Contribution: Supervised preparation of the Preliminary Drainage Report; principal author of the Floodplain Evaluation; reviewer of the Water Quality Assessment Report and Location Hydraulic Study.

Randy Carbone, Graphic Specialist. Video Animation Studio, Boston Architectural Center; 30 years of engineering, constructability, and visualization experience. Contribution: Prepared photo-simulations for the Visual Impact Assessment report.

David D. Clark, Environmental Manager. Master of Arts, Biology, California State University, Fullerton; 30 years of environmental planning experience, including California Environmental Quality Act/National Environmental Policy Act document preparation, agency liaison; permit applications; State Historic Preservation Officer coordination. Contribution: Project environmental management, reviewed and assisted with the preparation of the environmental document and corresponding technical studies.

Dan Conaty, Principal Environmental Planner. Master of Arts, Geography, San Diego State University; 30 years of environmental planning, impact assessment and permit compliance experience. Contribution: Technical editor of the Floodplain Evaluation Report and Location Hydraulic Study; and preparer of sections of the Community Impact Assessment and environmental document.

Carrie Chasteen, Senior Architectural Historian. Master of Science, Historic Preservation, School of the Art Institute of Chicago; 10 years of experience in cultural resources management. Contribution: Peer reviewer of the Historical Resources Evaluation Report.

Gene Ching, Professional Engineer, Senior Project Engineer. Bachelor of Science, Civil Engineering, University of California, Irvine; 21 years of experience. Contribution: Author of the Noise Abatement Decision Report.

Eric Coumou, Senior Graphic Information Systems Analyst. Master of Science, Geography, San Jose State University; 20 years of experience in Graphic Information Systems Analysis. Contribution: Analysis of graphic information systems data; created maps and generated the geodatabase for inclusion in the city’s Graphic Information Systems website.

Heather Ellison, Senior Environmental Planner. Bachelor of Science, Environmental and Natural Resources, University of Nevada, Reno; 10 years of environmental planning experience. Contribution: Assisted with the review and preparation of the environmental document and corresponding technical studies.

Chris Espiritu, Planner. Master of Arts, Transportation Management, San Jose State University; 5 years of planning experience. Contribution: Co-author of Land Use and Growth sections of the Community Impact Assessment Report, and data verification.

Miguel A. Galvan, Professional Engineer, Principal Drainage Project Engineer. Bachelor of Science, Civil Engineering, San Diego State University; 16 years of stormwater management experience. Contribution: Conducted quality assurance/quality control for the Preliminary Drainage Report.

Areg Gharabegian, Professional Engineer, Lead Noise Engineer. Master of Science, in Energy, Resources, and Environment, George Washington University; 33 years of experience in noise and vibration impact analysis and designing mitigation/abatement measures for transportation, construction, and industrial projects. Contribution: Technical review of the traffic noise analysis and barrier design for the Noise Technical Study and Noise Abatement Decision Report.

Christopher Hinds, Senior Environmental Planner, Certified Professional in Erosion and Sediment Control, Certified Professional in Storm Water Quality, Qualified Storm Water Pollution Prevention Plan Developer; Bachelor of Science, Soil Science with a Concentration in Environmental Technology, California Polytechnic State University, San Luis Obispo; 8 years of experience in water engineering and water filtration techniques and water quality-related document preparation for Caltrans-related projects. Contribution: Prepared the Storm Water Data Report and sections of the Water Quality Assessment Report.

Bryan Jarjoura, Noise Control Specialist. Master of Science, Mechanical and Aerospace Engineering, University of Southern California; 4 years of experience in noise control analysis and mitigation. Contribution: Traffic noise analysis, sound barrier design, and quality assurance/quality control of Noise Study Report.

Greg King, Environmental Manager. Master of Arts, Public Historical Studies, University of California, Santa Barbara; 28 years of community impact assessment experience. Contribution: Directed, coordinated and co-authored the Community Impact Assessment Report; provided project coordination related to National Historic Preservation Act (Section 106) and Section 4(f) issues.

Anne Kochaon, Qualified Environmental Professional, Environmental Senior Project Manager. Master of Science, Environmental Engineering, Asian Institute of Technology, Bangkok, Thailand; 28 years of experience in environmental planning and impact assessment. Contribution: Peer review and quality assurance/quality control of the environmental document, the Relocation Impact Report, the Floodplain Evaluation, the Visual Impact Assessment, the

Archaeological Study Report, the Section 4(f) Analysis, the Noise Study Report, the Noise Abatement Decision Report, the Community Impact Assessment, and the Water Quality Assessment Report.

Liz Koos, Senior Technical Editor. 24 years of editing experience. Contribution: Technical editor for Visual Impact Assessment, Water Quality Assessment Report, Hydraulic Location Report, Floodplain Evaluation Report, and Community Impact Assessment Report.

Jeffrey Lormand, Registered Landscape Architect (CA Number 3576); Masters in Landscape Architecture, University of Arizona; 10 years of visual impact assessment experience. Contribution: Review of the Visual Impact Assessment report.

Qiaohong Lu, Senior Drainage Engineer. Master of Science, Civil Engineering, Clemson University, South Carolina; 9 years of experience in drainage engineering. Contribution: Data collection and analysis for the Floodplain Evaluation Report; data collection and hydraulic analysis for the Location Hydraulic Study.

Brynna McNulty, Principal Planner. Bachelor of Arts, Environmental Studies, Bachelor of Arts, Cultural Anthropology, University of California at Santa Cruz; 10 years of experience in environmental planning and impact assessment. Contribution: Contributing author to the Community Impact Assessment.

Martin Meyer, Senior Noise Specialist, Institute of Noise Control Engineering. Master of Science, Physics, University of New Orleans; 14 years of experience in noise analysis. Contribution: Traffic Noise Model analysis; co-author of sections of the Noise Study Report.

Glen Parker, Professional Engineer, Project Engineer. Bachelor of Science, Civil Engineering, Gonzaga University, Spokane, Washington; 11 years of experience in transportation engineering. Contribution: Peer review and quality assurance/quality control of the Project Report and associated engineering studies in support of the environmental document.

Gary Petersen, Principal Project Manager. Master of Planning, University of Southern California; 38 years of environmental planning experience. Contribution: Peer review and quality assurance/quality control of the environmental document; the Visual Impact Assessment; the Community Impact Assessment; the Section 4(f) Evaluation; and the Air Quality Study Report.

Leslie Provenzano, Environmental Planner. Master of Planning, University of Southern California; 5 years of visual and community impact assessment experience. Contribution: Author of the visual/aesthetic resources section and the Visual Impact Assessment.

Rabindra Puttagunta, Project Report Project Traffic Engineer. Master of Science, Transportation Engineering, University of Saskatchewan, Saskatoon, Canada; 23 years of transportation and traffic engineering experience. Contribution: Centennial Traffic Operations.

Jason Ogden, Noise and Vibration Specialist. Bachelor of Arts, Acoustics, Columbia College, Chicago; 5 years of experience in noise control analysis and mitigation. Contribution: Traffic noise analysis and barrier design; co-author of the Noise Study Report; prepared the Noise section of the environmental document.

Gilberto Ruiz, Senior Project Manager. Master of Arts, Urban and Regional Planning, University of California, Los Angeles; 20 years of experience in environmental planning and impact assessment. Contribution: Peer review and quality assurance/quality control of the Community Impact Assessment; Project Manager for the environmental document.

Robert Scales, Professional Engineer, Senior Program Director (Traffic). Master of Engineering, Transportation, University of South Carolina, Columbia; 40 years of traffic engineering and transportation planning experience. Contribution: Author of the Traffic Study Report.

Angela Schnapp, Senior Environmental Planner. Master of Science, Environmental Engineering, University of Illinois Urbana-Champaign; 12 years of experience in environmental planning and impact assessment. Contribution: Author of the Section 4(f) Evaluation and the Land Use Parks and Recreation section.

Veronica Seyde, Project Scientist. Certified Professional in Erosion and Sediment Control, Certified Professional in Storm Water Quality, Qualified Storm Water Pollution Prevention Plan Developer. Master of Science, Environmental Studies, California State University, Fullerton; more than 25 years of experience in water quality sciences. Contribution: Preparer of sections of the Water Quality Assessment Report.

Daniel Wagner, Professional Engineer, Senior Engineer. Bachelor of Science, Civil Engineering, San Diego State University; 9 years of roadway design, drainage design, and project management experience. Contribution: Engineering support, Section 4(f), and Water Quality.

Lincoln Walker, Planner. Master of Arts, Regional and Urban Planning, University of California, Irvine; 7 years of environmental planning experience. Contribution: Environmental justice analysis and census data verification for the Community Impact Assessment.

Michael Weber, Senior Noise and Air Quality Specialist. Bachelor of Science, Physiology; University of California, Davis; 21 years of experience in noise control analysis and mitigation. Contribution: Traffic noise analysis, sound barrier design, and report writing.

Statistical Research, Inc.

Kenneth M. Becker, Principal Investigator, Prehistoric Archaeology, Registered Professional Archaeologist. Master of Arts, Anthropology, California State University, Los Angeles; more than 23 years of archaeological fieldwork, analysis, and project management experience. Contribution: Extended Phase I geoarchaeological report management and editing.

Jeffery A. Homburg, Principal Investigator, Prehistoric Archaeology, Registered Professional Archaeologist. Doctor of Philosophy, Soil Science, Iowa State University of Science and Technology; 24 years of experience with soil science and geomorphic studies. Contribution: Extended Phase I geoarchaeological report editing.

Jason D. Windingstad, Co-Principal Investigator, Prehistoric Archaeology. Master of Science, Soil Science (emphasis in Pedology and its applications in Geoarchaeology), University of Tennessee, Knoxville; 7 years of experience as geoarchaeological analyst on cultural resource management projects. Contribution: Extended Phase I geoarchaeological report writing.

Chapter 7 Distribution List

Notices of Availability of this Environmental Impact Report/Environmental Impact Statement have been sent to all property owners within 300 feet of the build alternatives (Alternatives A through C). In addition, notices have been sent to interested parties that have attended public meetings on the project or requested to be added to a notification list for the project.

Copies of the document have been provided on disks (DVDs) to the following agencies, elected officials, and organizations.

Federal Agencies

Jan Knight, Deputy Field Supervisor
USFWS
Sacramento Fish and Wildlife Office
2800 Cottage Way W-2605
Sacramento, CA 95825

Colonel William J. Leady, District Engineer
U.S. Army Corps of Engineers
1325 J Street
Sacramento, CA 95814-2922

Tom Plenys, Environmental Review Office
U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, CA 94105-3901

Christine S. Lehnertz, Regional Director
National Park Service, Pacific West Region
333 Bush St., Suite 500
San Francisco, CA 94104-2828

U.S. Department of Agriculture
1400 Independence Ave., SW
Washington, D.C. 20250

Department of the Interior
1849 C Street, N.W.
Washington, D.C. 20240

State Agencies

Dr. Jeffrey R. Single, Regional Manager
California Dept. of Fish & Wildlife
1234 East Shaw Avenue
Fresno, CA 93710

Major General Anthony L. Jackson, USMC (Ret.), Director
California Department of Parks and Recreation
1416 9th Street
Sacramento, CA 95814

California Emergency Management Agency
Mark Johnson, Planning Branch Chief
3650 Schriever Ave.
Mather, CA 95655-4203

Director
California Department of Conservation
801 "K" Street
Sacramento, CA 95814

California State Water Resources Control Board
1001 I Street
Sacramento, CA 95814

Central Valley Flood Protection Board
3310 El Camino Avenue, Room 151
Sacramento, CA 95821

James Ramos, Chairman
Native American Heritage Commission
915 Capitol Mall, Rm. 288
Sacramento, CA 95814

California Natural Resources Agency
John Laird, Secretary
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

Department of Water Resources
1416 9th Street
Sacramento, CA 95814

Cy Oggins, Division Chief Environmental Planning
California State Lands Commission
100 Howe Avenue, Suite 100 South
Sacramento, CA 95825

California Air Resources Board
1001 "I" Street
P.O. Box 2815
Sacramento, CA 95812

Department of Transportation
Division of Environmental Analysis
Attn: Gregoria Ponce
P.O. Box 942874, M.S. 27
Sacramento, CA 94274-0001

California Highway Patrol
P.O. Box 942898
Sacramento, CA 94298-0001

Office of Historic Preservation
1725 23rd Street, #100
Sacramento, CA 95816

Department of Transportation
Division of Environmental Analysis
Attn: Peter Bond
P.O. Box 942874, M.S. 27
Sacramento, CA 94274-0001

Regional Agencies

Central Valley Regional Water Quality Control Board-Region
1685 "E" Street
Fresno, CA 93706

Ahron Hakimi, Executive Director
Kern County Council of Governments
1401 19th Street, Suite 300
Bakersfield, CA 93301

San Joaquin Valley Air Pollution Control District
Southern Region
34946 Flyover Court
Bakersfield, CA 93308

County Agencies

Charles Lackey, Director
County of Kern Floodplain Management
2700 M Street, Suite 500
Bakersfield, CA 93301

Lorelei H. Oviatt, AICP, Director
County of Kern, Planning Department
2700 M Street, Suite 100
Bakersfield, CA 93301

Donny Youngblood, Sheriff
Kern County Sheriff's Department
1350 Norris Road
Bakersfield, CA 93308

Craig M. Pope,
Roads Commissioner
Kern County Roads Department
2700 M Street, Suite 400
Bakersfield, CA 93301

Robert Lerude, Director
Kern County Parks and Recreation
2820 M Street
Bakersfield, CA 93301

Kern County Fire Department
Brian Marshall, Fire Chief
5642 Victor Street
Bakersfield, CA 93308

Glen Stephens, P.E., Air Pollution Control Officer
Eastern Kern County Air Pollution Control District
2700 M Street, Suite 302
Bakersfield, CA 93301

Bob Neath, General Manager
Kern Regional Transit
2700 M Street, Suite 400
Bakersfield, CA 93301

Local Agencies

Nick Fidler, Acting Director
City of Bakersfield Public Works Department
1501 Truxtun Avenue
Bakersfield, CA 93301

Greg Williamson, Chief of Police
Bakersfield Police Department
1601 Truxtun Ave.
Bakersfield, CA 93301

Historic Preservation Commission City of Bakersfield, Economic & Community Dev.
1600 Truxtun Avenue Suite 300
Bakersfield, CA 93301

Roberta Gafford, City Clerk
City of Bakersfield
1600 Truxtun Avenue
Bakersfield, CA 93301

Art Chianello, Water Resources Manager
City of Bakersfield Water Resources Department
1000 Buena Vista Road
Bakersfield, CA 93311

Jim Eggert, Planning Director
City of Bakersfield Planning Division
1715 Chester Avenue
Bakersfield, CA 93301

Douglas R. Greener, Fire Chief
Bakersfield Fire Department
2101 H Street
Bakersfield, CA 93301

Dianne Hoover, Director
City of Bakersfield, Dept. of Parks and Recreation
1600 Truxtun Avenue (3rd floor)
Bakersfield, CA 93301

Federal and State Elected Officials

Andy Vidak
State Senate 16th District
1122 Truxtun Avenue, Suite 100
Bakersfield, CA 93301

Shannon L. Grove
State Assembly 34th District
4900 California Ave., Ste 100-B
Bakersfield, CA 93309

Rudy Salas
State Assembly 32nd District
1430 Truxtun Ave., Suite 803
Bakersfield, CA 93301

Office of U.S. Senator
Barbara Boxer
2500 Tulare Street, Suite 5290
Fresno, CA 93721

Office of U.S. Senator
Dianne Feinstein
2500 Tulare Street, Suite 4290
Fresno, CA 93721

Kevin McCarthy
House of Representatives 23rd District
4100 Empire Dr., Ste 150
Bakersfield, CA 93309

Jean Fuller
State Senate 18th District
5701 Truxtun Ave., Ste 105
Bakersfield, CA 93309

David Valadao
House of Representatives 21st District
2700 M St., Ste 250 B
Bakersfield, CA 93301

County Elected Officials

Leticia Perez, Dist. 5
Kern County Board of Supervisors
1115 Truxtun Ave., 5th Floor
Bakersfield, CA 93301

Zack Scrivner, Dist. 2
Kern County Board of Supervisors
115 Truxtun Ave., 5th Floor
Bakersfield, CA 93301

David Couch, Dist. 4
Kern County Board of Supervisors
1115 Truxtun Ave., 5th Floor
Bakersfield, CA 93301

Mike Maggard, Dist. 3
Kern County Board of Supervisors
1115 Truxtun Ave., 5th Floor
Bakersfield, CA 93301

Mick Gleason, Dist. 1
Kern County Board of Supervisors
1115 Truxtun Ave., 5th Floor
Bakersfield, CA 93301

Local Elected Officials

Mayor Harvey L. Hall
City of Bakersfield
Bakersfield City Hall
1600 Truxtun Ave.
Bakersfield, CA 93301

Terry Maxwell, Councilmember, Ward 2
Bakersfield City Council
Bakersfield City Hall
1600 Truxtun Ave.
Bakersfield, CA 93301

Bob Smith, Councilmember Ward 4
Bakersfield City Council
Bakersfield City Hall
1600 Truxtun Ave.
Bakersfield, CA 93301

Jacquie Sullivan, Councilmember Ward 6
Bakersfield City Council
Bakersfield City Hall
1600 Truxtun Ave.
Bakersfield, CA 93301

Ken Weir, Councilperson, Ward 3
Bakersfield City Council
Bakersfield City Hall
1600 Truxtun Ave.
Bakersfield, CA 93301

Willie Rivera, Ward 1
Bakersfield City Council
Bakersfield City Hall
1600 Truxtun Ave.
Bakersfield, CA 93301

Harold Hanson, Councilmember Ward 5
Bakersfield City Council
Bakersfield City Hall
1600 Truxtun Ave.
Bakersfield, CA 93301

Russell Johnson, Councilmember Ward 7
Bakersfield City Council
Bakersfield City Hall
1600 Truxtun Ave.
Bakersfield, CA 93301

Interested Groups, Organizations, and Individuals

Denise Casteneda-Ornelas, Chairperson
Kern County Hispanic Chamber of Commerce
231 H Street
Bakersfield, CA 93304

Richard Jarrett, President
Kern County Historical Society
PO Box 141
Bakersfield, CA 93302

Kudzubitcwanap Palap Tribe
The Honorable Robert Gomez
Chairman
2619 Driller Ave.
Bakersfield, CA 93306

Kathy Montes-Morgan, Chairperson
Tejon Indian Tribe
2234 4th Street
Wasco, CA 93280

Dr. Rob Arias, Superintendent
Bakersfield City School District
1300 Baker Street
Bakersfield, CA 93305

Delia Dominguez
Kitanemuk and Yowlumne Tejon Indians
P.O. Box 10766
Bakersfield, CA 93389

Tule River Indian Tribe
Neil Peyron, Chairperson
P.O. Box 589
Porterville, CA 93258

Monache Inter-Tribal Association
Ronald Wermuth
P.O. Box 168
Kernville, CA 93238

Robert Robinson, Co-Chairman
Kern Valley Indian Councils
P.O. 401
Weldon, CA 93283

Sherry Gomez, Director of Libraries
Kern County Library
701 Truxtun Avenue
Bakersfield, CA 93301

Ali Morris, President/CEO
Kern County Black Chamber of Commerce
1309 L Street
Bakersfield, CA 93301

Robert Gomez, Chairperson
Tubatulabals of Kern Valley
P.O. Box 226
Lake Isabella, CA 93240

Cynthia Pollard, President/CEO
Greater Bakersfield Chamber of Commerce
1725 Eye Street
Bakersfield, CA 93301

Dr. Don Carter, Superintendent
Kern High School District
5801 Sundale Ave.
Bakersfield, CA 93309

Mr. Doug Pike, Superintendent
Stockdale Christian School
4901 California Ave.
Bakersfield, CA 93309

Carol A. Pulido
15011 Lockwood Valley Rd.
Frazier Park, CA 93225

Richard Chapman, Chairman/CEO
Kern Economic Development Corporation
2700 M Street, Suite 200
Bakersfield, CA 93301

Hall Ambulance
1001 21st Street
Bakersfield, CA 93301

Chumash Council of Bakersfield
Ariann Chow-Garcia, Chair
2421 “O” Street
Bakersfield, CA 93301

Christine Lizardi Frazier, Superintendent
Kern County Superintendent of Schools 1300 17th Street – CITY CENTRE
Bakersfield, CA 93301-4533

David Laughing Horse Robinson, Chairman
Kawaiisu Tribe
P.O. Box 20849
Bakersfield, CA 93390

Ruben Barrios, Chairman
Santa Rosa Rancheria
P.O. Box 8
Lemoore, CA 93245

Michahai Wukasachi Band of Eshom Valley
Kenneth Woodrow
1179 Rock Haven Ct.
Salinas, CA 93906

Karen King, CEO
Golden Empire Transit District
1830 Golden State Ave.
Bakersfield, CA 93301

Sierra Club
Kern-Keweah Chapter
P.O. Box 3357
Bakersfield, CA 93385

L/ Mark Mulkay, General Manager
Kern Delta Water District
501 Taft Highway
Bakersfield, CA 93307

Libraries

Beale Memorial Library
701 Truxtun Avenue
Bakersfield, CA 93301

Bryce C. Rathbun Branch Library
200 West China Grade Loop
Bakersfield, CA 93308

Baker Branch Library
1400 Baker Street
Bakersfield, CA 93305

Eleanor Wilson Branch Library
1901 Wilson Road
Bakersfield, CA 93304

Southwest Branch Library
8301 Ming Avenue
Bakersfield, CA 93311

Holloway-Gonzales Branch Library
506 E. Brundage Lane
Bakersfield, CA 93307