Hageman Road Extension Project from Knudsen Drive to Golden State Avenue at Airport Drive

City of Bakersfield, Kern County, California

06-KER-204-5.9/6.8

Project ID# 06-1400-0033

Initial Study with Proposed Mitigated Negative Declaration

Prepared by the

State of California Department of Transportation

January 2014

General Information about this Document

What's in this document:

The California Department of Transportation (Caltrans) has prepared this Initial Study to examine the potential environmental impacts of the alternatives being considered for the proposed project in Kern County, California. The document tells you why the project is being proposed, what alternatives we have considered for the project, how the existing environment could be affected by the project, the potential impacts of each alternative, and the proposed avoidance, minimization, and/or mitigation measures.

What you should do:

- Please read the document. Additional copies and technical studies are available for review at the Caltrans District 6 office at 1352 W. Olive Avenue, Fresno, CA 93778, and the locations below:

  Beale Memorial Library
  701 Truxtun Avenue
  Bakersfield, CA 93301

  Thomas Roads Improvement Program Office
  City Hall North, 1600 Truxtun Avenue, 3rd Floor
  Bakersfield, CA 93301

- The document can also be downloaded at: http://www.dot.ca.gov/dist6/environmental/envdocs/d6/.
- Attend the public information meeting on __2/4/14_____.
- We'd like to hear from you. If you have any comments on the proposed project, please attend the public information meeting or send your written comments to Caltrans by the deadline. Submit comments via U.S. mail to:

  Michelle Ray, Acting Chief
  Sierra Pacific Environmental Analysis Branch
  California Department of Transportation, District 6
  855 M Street, Suite 200
  Fresno, CA 93721

- Submit comments via email to: michelle.ray@dot.ca.gov.
- Submit comments by the deadline: _____2/21/14_____.

What happens next:

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

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, large print, on audiocassette, or on computer disk. To obtain a copy in one of these alternate formats, please call or write to Caltrans, Attn Michelle Ray, Sierra Pacific Environmental Analysis Branch, District 6, 855 M Street, Suite 200, Fresno, CA 93721; (559) 445-5286 Voice, or 711.

06-KER-204-PM 5.9/6.8
Project ID#: 06-1400-0033

Extend Hageman Road from Knudsen Drive to Golden State Avenue at Airport Drive

INITIAL STUDY
with Proposed Mitigated Negative Declaration

Submitted Pursuant to: (State) Division 13, California Public Resources Code

THE STATE OF CALIFORNIA
Department of Transportation

1/14/14
Date of Approval

Jennifer H. Taylor
Office Chief, Central Region Environmental South
California Department of Transportation
CEQA Lead Agency

Proposed Mitigated Negative Declaration

Pursuant to: Division 13, Public Resources Code

Project Description

The California Department of Transportation (Caltrans) proposes to extend Hageman Road in the northwest corner of the city of Bakersfield in Kern County from Knudsen Drive—0.62 mile west of State Route 99—to Golden State Avenue at Airport Drive.

Determination

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

Caltrans has prepared an Initial Study for this project and, pending public review, expects to determine the proposed project would not have a significant effect on the environment. The project would not affect coastal zones; agricultural resources; hydrology and floodplains; mineral resources; natural communities; plants; parks/recreation; population/housing; and wild or scenic rivers.

The project would have no significant effect on air quality; noise, water quality and storm water runoff; land use and planning; public services; utilities; emergency services; or transportation and traffic.

Because the following mitigation measures would reduce potential effects to insignificance, the proposed project would have no significant adverse effects on aesthetics; geology; soils; seismicity; topography; hazards and hazardous materials; cultural resources; paleontological resources; or endangered species:

- In accordance with local design context and input from the City of Bakersfield, aesthetics would be mitigated by the following: replacement of landscaping removed during construction and a roadway design that appears continuous with the existing roadway.
- Geology and soils would be mitigated by testing and using recommendations in the project design.
- Hazardous waste would be mitigated by requiring proper handling and disposal of lead-impacted soils and yellow traffic striping. Special provisions would be included in the construction contract to minimize any worker or public exposure.
- Endangered species would be mitigated by compliance with all permit provisions, conservation plans, habitat programs, and measures identified in this Initial Study.

_____
Date of Approval

_____
Jennifer H. Taylor
Office Chief, Central Region Environmental South
California Department of Transportation

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List of Abbreviated Terms

BNSF	Burlington Northern Santa Fe
Caltrans	California Department of Transportation
CFR	Code of Federal Regulations
CH_4	methane
CO	carbon monoxide
dBA	decibel (1-hour A-weighted equivalent sound level)
N_2O	nitrous oxide
NO_2	nitrogen oxides
O_3	ozone
Pb	lead
PFCs	perfluorocarbons
PM_{10}	particulate matter larger than 2.5 micrometers but less than 10 micrometers
$PM_{2.5}$	fine particulate matter 2.5 micrometers or less
ppm	parts per million
SF_6	sulfur hexafluoride
SO_2	sulfur dioxide
ug/m3	micrograms per cubic meter

Chapter 1 Proposed Project

1.1 Introduction

The California Department of Transportation (Caltrans) proposes to extend Hageman Road in the northwest corner of the city of Bakersfield from Knudsen Drive—about 0.62 mile west of State Route 99—to Golden State Avenue (State Route 204). The total length of the project is about 1.5 miles. The project would build a four-lane road from Hageman Road and Knudsen Drive to join Golden State Avenue just east of State Route 99. The project would build a new bridge over both the San Joaquin Valley Railroad and State Route 99 and a new double-box culvert at the Beardsley Canal lateral. The existing bridge over Airport Drive would be widened, and existing ramps at the Airport Drive/Golden State Avenue interchange would be modified. A new bike path would extend from Knudsen Drive along the southbound side of the proposed Hageman Road extension to the Rio Miranda/ Buck Owens Boulevard intersection. Figures 1-1 and 1-2 show project vicinity and location maps.

Hageman Road is an east-west road extending from Nord Avenue to the east to Knudsen Drive in the city of Bakersfield and unincorporated sections of Kern County. Golden State Avenue is a north-south highway that ends near the State Route 99 and Airport Drive intersection and begins at the Union Avenue and State Route 58 intersection. Between Airport Drive and F Street, the freeway portion of Golden State Avenue consists of four l2-foot-wide lanes, a 4-foot-wide median with a concrete median barrier, and 10-foot-wide outside shoulders.

The Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users (known as SAFETEA-LU), signed into law on August 10, 2005, earmarked federal funding for projects in the Bakersfield area. Funding for the preparation of documents for the Hageman Road Extension Project is provided by a federal grant through the National Corridor Infrastructure Improvement Program SAFETEA-LU Section 1302 and matching local funds.

This project is included in the Kern Council of Governments 2011 Final Regional Transportation Plan (project identification number KER08RTP013) and on page 26 of the Kern Council of Governments financially constrained 2011 Federal Transportation Improvement Program (project identification number KER020604); the regional plan and the improvement program were both found to be conforming by the Federal Highway Administration and Federal Transit Administration.

After compliance with the California Environmental Quality Act is completed, a Categorical

Exclusion under the National Environment Policy Act would be approved.

1.2 Purpose and Need

1.2.1 Purpose

The purpose of the proposed project is to provide a direct link to downtown Bakersfield for residential communities in northwest Bakersfield.

1.2.2 Need

As the residential population in the northwest Bakersfield area continues to grow, the need to access downtown Bakersfield is also expected to increase. In addition, accident rates at three of the Golden State Avenue and Airport Drive interchange ramps are higher than the statewide average for similar facilities; these higher rates may be partly attributed to the congested traffic conditions. The accidents further contribute to the congested conditions and delay.

New Direct Connection to Downtown Bakersfield

No direct routes across State Route 99 connect northwest Bakersfield with downtown Bakersfield between Olive Drive and State Route 58 (Rosedale Highway). Motorists must use various connected routes to access the downtown area, leading to increased travel times due to slow-moving traffic. As the population in the Bakersfield area increases, motorists already experiencing slow traffic during peak morning and evening hours would encounter more traffic congestion and longer delays. Accident rates would also be affected by the stop-and-go traffic during peak travel times.

With a more direct route from northwest Bakersfield across State Route 99 between Olive Drive and State Route 58 (Rosedale Highway) to the downtown area, along with improvements to the State Route 99 and Golden State Avenue interchange, the Airport Drive interchange and Golden State Avenue ramp areas, motorists would experience less traffic congestion and delay in the future.

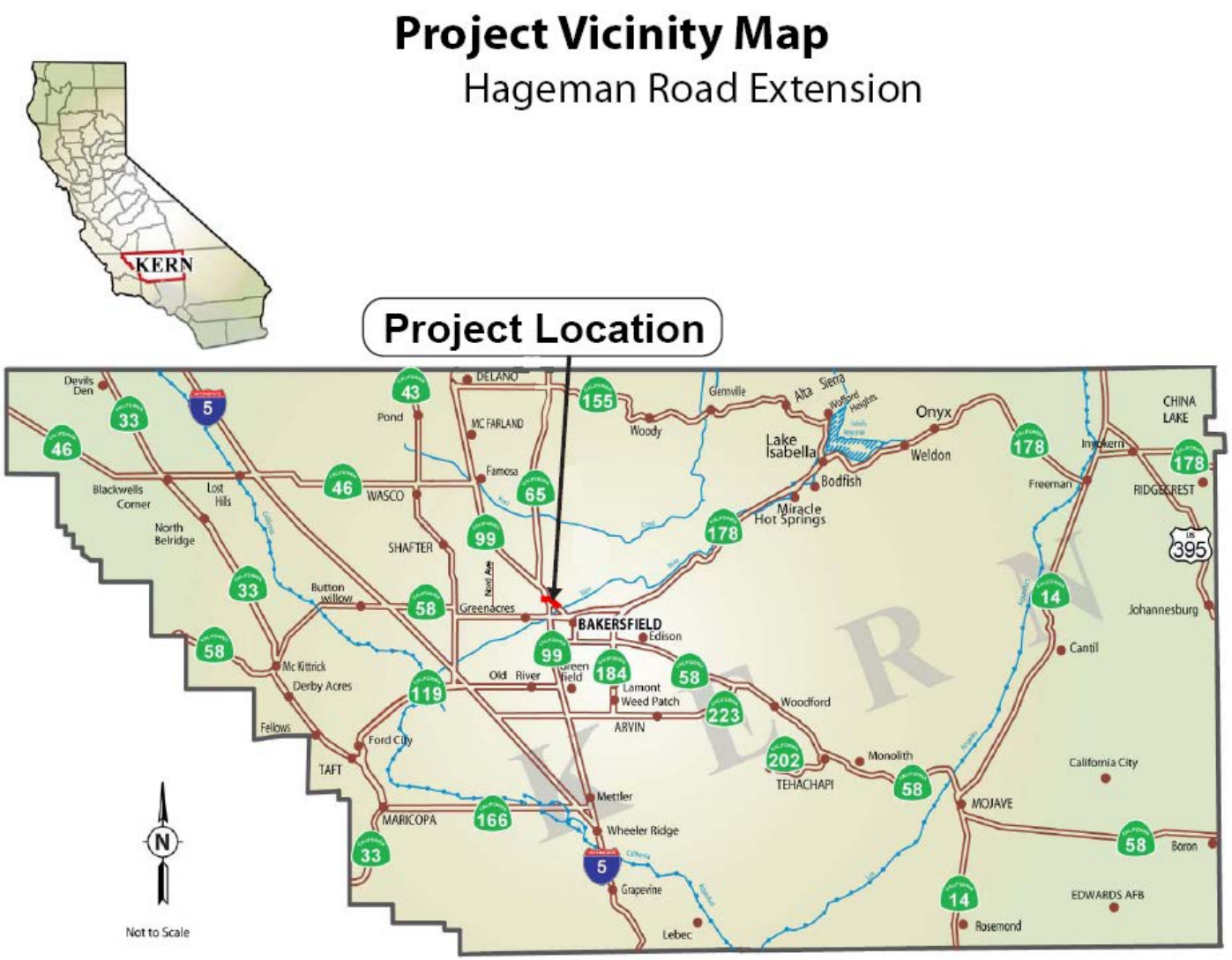


Figure 1-1 Project Vicinity Map

Figure 1-2 Project Location Map

Traffic Congestion

According to the California Department of Finance, Kern County's population is predicted to grow about 40 percent: from 839,631 residents in 2010 to 1,352,627 residents in 2030. As population increases in the northwest Bakersfield area, motorists already experiencing congested traffic conditions during peak hours between northwest Bakersfield and downtown Bakersfield would encounter unacceptable level-of-service delays (congestion).

Levels of service describe the conditions a motorist experiences while traveling on a highway or surface streets. This rating system ranges from "A" to "F" with "A" representing the best traffic conditions (free-flowing traffic) and "F" representing the worst (congestion and delay). The level of service descriptions are shown in Figures 1-3 through 1-6. Figure 1-3 shows the level of service for freeways; Figure 1-4 for multi-lane highways; Figure 1-5 for intersections without signals; and Figure 1-6 for intersections with signals.

The City of Bakersfield strives to maintain level of service C on its roadways. Caltrans works to maintain levels of service between C and D on all state roadways within District 6. Levels of service E and F represent unacceptable levels of service.

Three key intersections and four ramp within the project area operated at worse than level of service D during one or both peak hour periods under baseline conditions (2008). Additionally, five intersections and seven ramp areas are projected to operate at worse than level of service D during one or both peak hours under 2035 No-Build Alternative conditions. Without the proposed project, in 2035, one northbound segment and two southbound segments of State Route 99 in the project area would operate at worse than level of service D during at least one of the peak hours (morning and evening).

Drivers would experience longer delays at certain intersections, ramp areas, and segments of State Route 99 and Golden State Avenue currently used for access between northwest Bakersfield and downtown Bakersfield. The overall projected increase in travel time by 2035 without the project would be 67,000 hours, for a travel time cost of $4,249.5 million. If the project were built, in terms of money, motorists would see travel time benefits of $6.35 million per year (2035) and a total life cycle benefit of $81.5 million. This is based on an analysis that used the Surface Transportation Efficiency Analysis Model Version 2.0, developed by the Federal Highway Administration. The Surface Transportation Efficiency Analysis Model converts the cost of congestion to dollars. The model assigns $10.83 as the cost for a person sitting in congestion for one hour. 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).

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**

Figure 1-3 Levels of Service for Freeways

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**

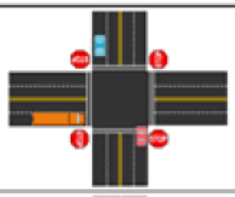
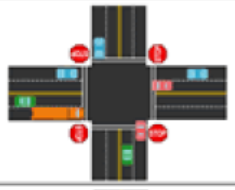
Source: 2000 HCM, Exhibit 21-3, Speed-Flow Curves with LOS Criteria for Multi-Lane Highways

Figure 1-4 Levels of Service for Multi-Lane Highways

LEVELS OF SERVICE

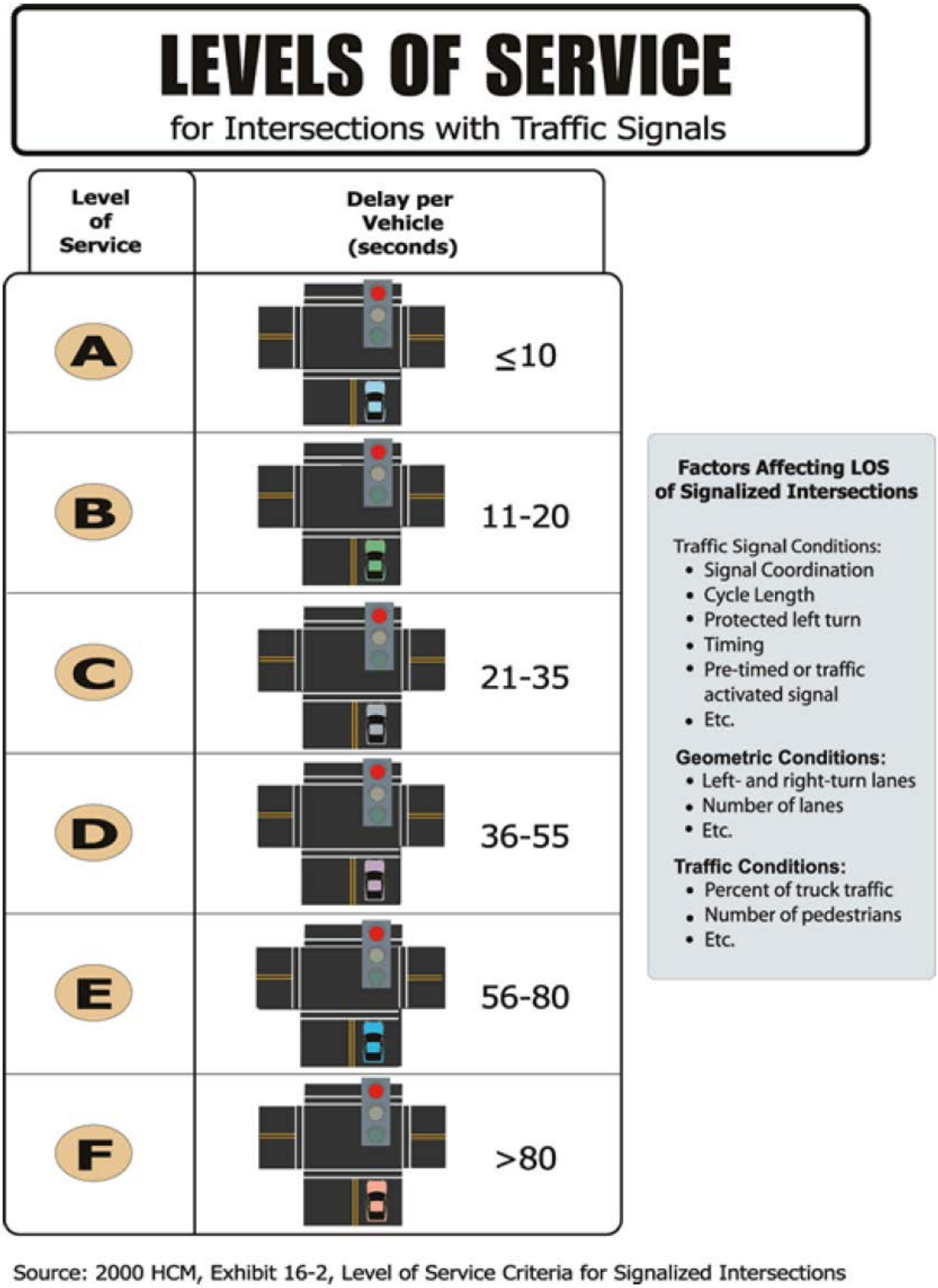
Unsignalized Intersections

Four-Way Stop

Level of Service	Flow Conditions	Delay per Vehicle (seconds)	Technical Descriptions
A		<10	Very short delays
B		10-15	Short delays
C		16-25	Minimal delays
D		26-35	Minimal delays
E		36-50	Significant delays
F		>50	Considerable delays

Source: 2000 HCM, Exhibit 17-22, Level of Service Criteria for AWSC Intersections

Figure 1-5 Levels of Service for Intersections with No Signals



Source: 2000 HCM, Exhibit 16-2, Level of Service Criteria for Signalized Intersections

Figure 1-6 Levels of Service for Intersections with Signals

The benefits are balanced against the costs of building the project. A 20-year life cycle is used for estimating the costs. The build alternative would provide benefits that exceed the cost of building the project. The Surface Transportation Efficiency Analysis Model analysis is discussed in greater detail in Section 2.2.4, Traffic and Transportation/Pedestrian and Bicycle Facilities.

Table 1.1 shows existing and forecasted levels of service for key intersections within the project study area: in 2008 (existing or baseline conditions), in 2015 (opening year of the project), and in 2035 (design year of the project). This comparison uses the level of service during the busiest times of the day (peak hours). Peak hours generally run from 7:00 a.m. to 8:00 a.m. and 4:00 p.m. to 5:00 p.m.

Table 1.2 shows the level of service for State Route 99 and State Route 204 ramps in the project area without the project for existing (2008), opening (2015), and design (2035) years; Table 1.3 shows the level of service for the same State Route 99 and State Route 204 segments without the project for the same years.

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

Intersection	Existing (Baseline) Conditions (2008)			Forecasted Conditions (2015)		Forecasted Conditions (2035)	
	Peak Hour	Level of Service	Average Delay (seconds)	Level of Service	Average Delay (seconds)	Level of Service	Average Delay (seconds)
Olive Drive/Fruitvale Avenue	Morning	B	16.7	C	26.4	C	23.8
	Evening	B	16.0	C	32.2	D	37.5
Olive Drive/Knudsen Drive	Morning	F	214.2	F	222.3	F	234.8
	Evening	F	95.1	F	139.1	F	188.8
Olive Drive/State Route 99 southbound ramps	Morning	F	127.6	F	–	F	–
	Evening	F	–	F	–	F	–
Olive Drive/State Road	Morning	B	18.8	B	16.3	C	24.0
	Evening	C	27.7	C	31.2	C	33.2
Olive Drive/State Route 99 northbound ramps	Morning	B	11.9	B	13.8	B	14.1
	Evening	B	11.9	B	13.5	B	13.9
Olive Drive/Airport Drive	Morning	C	22.2	C	25.1	C	23.4
	Evening	C	31.8	D	43.1	D	35.5
Hageman Road/Fruitvale Avenue	Morning	C	22.2	C	22.0	C	23.1
	Evening	C	24.1	C	24.3	C	27.0
Hageman Road/Knudsen Drive	Morning	A	0.2	B	14.5	C	27.1
	Evening	A	0.2	C	26.3	F	81.8
Airport Drive/State Road/ State Route 204 westbound ramps	Morning	C	22.6	C	25.8	C	21.6
	Evening	C	23.7	C	24.5	C	30.5
State Route 99 northbound off-ramp–Airport Drive/Buck Owens Boulevard	Morning	B	11.3	B	16.2	B	17.0
	Evening	B	17.5	B	17.9	B	18.3
Buck Owens Boulevard/ Rio Mirada Drive	Morning	C	30.1	D	53.8	E	55.0
	Evening	C	33.8	D	36.9	D	41.1
Golden State Avenue/ F Street	Morning	F	111.3	C	32.0	E	59.8
	Evening	D	37.1	E	58.0	F	138.7

Note: Shading indicates intersection operations worse than level of service D.

– = Facility does not currently exist and assumed not constructed under future no-build conditions; therefore, data is unavailable.

Table 1.2 Existing and Future Levels of Service for Ramp Areas without the Project

Freeway Segment/Ramp	2008 (Existing) Level of Service		Forecasted 2015 Level of Service		Forecasted 2035 Level of Service	
	Morning Peak Hour	Evening Peak Hour	Morning Peak Hour	Evening Peak Hour	Morning Peak Hour	Evening Peak Hour
State Route 99 Northbound						
Buck Owens Boulevard off-ramp	B	C	C	D	C	D
Airport Drive off-ramp	C	D	D	E	E	E
State Route 204 on-ramp	C	E	D	F	D	F
Olive Drive off-ramp	C	F	E	F	E	F
Olive Drive on-ramp	B	B	C	C	C	C
State Route 99 Southbound						
Olive Drive off-ramp	C	C	D	D	C	D
Olive Drive on-ramp (loop)	C	C	D	D	C	C
Olive Drive on-ramp (diagonal)	E	E	F	F	D	F
State Route 204 off-ramp	E	E	F	F	F	F
Airport Drive on-ramp	C	D	D	D	C	D
Rosedale Highway off-ramp	C	C	D	D	D	E
State Route 204 Northbound						
Airport Drive off-ramp	B	B	C	C	D	E
Airport Drive on-ramp (loop)	B	A	B	B	B	C
Airport Drive on-ramp (diagonal)	B	A	B	B	C	C
State Route 204 Southbound						
Airport Drive on-ramp (loop)	B	B	C	C	C	C
State Route 99 on-ramp	–	–	–	–	–	–
Airport Drive (diagonal)	C	B	D	C	D	D

Note: Shading indicates intersection operations worse than Level of Service D.

– = Facility does not currently exist and assumed not constructed under future no-build conditions; therefore, data unavailable.

Table 1.3 Existing and Future Levels of Service for State Route 99 and State Route 204 Main Line without the Project

Freeway Segment	2008 (Existing) Level of Service		Forecasted 2015 Level of Service		Forecasted 2035 Level of Service	
	Morning Peak Hour	Evening Peak Hour	Morning Peak Hour	Evening Peak Hour	Morning Peak Hour	Evening Peak Hour
State Route 99 Northbound						
Buck Owens Boulevard on-ramp to Airport Drive off-ramp	B	C	C	D	D	E
Airport Drive off-ramp to State Route 204 on-ramp	A	C	C	D	C	D
State Route 204 on-ramp to Olive Drive off-ramp	B	D	D	F	D	F
Olive Drive off-ramp to Olive Drive on-ramp	A	B	C	D	C	C
North of Olive Drive	B	B	C	D	C	C
State Route 99 Southbound						
North of Olive Drive	C	C	C	D	C	D
Olive Drive off-ramp to Olive Drive on-ramp	B	C	C	C	C	C
Olive Drive loop on-ramp to Olive Drive direct on-ramp	C	C	C	D	C	D
Olive Drive direct on-ramp to State Route 204 off-ramp	D	D	F	F	E	F
State Route 204 off-ramp to Airport Drive on-ramp	C	C	C	C	C	D
Airport Drive on-ramp to Rosedale Highway off-ramp	C	C	D	D	D	E
State Route 204 Northbound						
F Street to Airport Drive off-ramp	B	B	B	C	C	D
Knudsen Drive to State Route 99 ramps	–	–	–	–	–	–
State Route 204 Southbound						
F Street to Airport Drive off-ramp	D	B	D	C	D	D
Knudsen Drive to State Route 99 ramps	–	–	–	–	–	–

Note: Shading indicates intersection operations worse than Level of Service D.

– = Facility does not currently exist and assumed not constructed under future no-build conditions; therefore, data unavailable.

Accident Rates

Total accident rates for three of the Golden State Avenue and Airport Drive interchange ramps are higher than the statewide average for similar facilities. The following factors affect accident rates: stop-and-go traffic during periods of heavy traffic congestion; uncontrolled access onto northbound Golden State Avenue from the Airport Drive loop on-ramp; non-standard (narrow) shoulders along Golden State Avenue; and non-standard (short) distance along the Airport Drive on-ramp to northbound State Route 99

Without the project improvements, accident rates are expected to be higher than average with increased traffic. Table 1.4 shows accident data from the accident surveillance system.

Table 1.4 Traffic Accident Surveillance and Analysis System Data (2007–2010)

Location	Accident Statistical Data			Actual Accident Rates			Statewide Average Accident Rates		
	Total	Fatal	Injury	Fatal	Fatal and Injury	Total	Fatal	Fatal and Injury	Total
State Route 99									
Post Mile 20.7/27.87	1207	5	338	0.005	0.36	1.28	0.010	0.31	1.01
Post Mile 26.7/27.24	53	0	20	0.000	0.31	0.83	0.009	0.27	0.85
Southbound Connector to Golden State Avenue	3	0	0	0.000	0.00	0.17	0.005	0.20	0.60
Northbound Connector from Golden State Avenue	4	0	2	0.000	0.13	0.26	0.003	0.11	0.35
Golden State Avenue (State Route 204)									
Post Mile 5.89/6.75	37	2	9	0.055	0.30	1.02	0.010	0.26	0.84
Northbound off-ramp to Airport Drive	3	0	1	0.000	0.10	0.29	0.004	0.42	1.20
Southbound directional on-ramp from Airport Drive	2	0	1	0.000	0.14	0.27	0.003	0.20	0.65
Northbound loop on-ramp from Airport Drive	1	0	1	0.000	1.22	1.25	0.004	0.20	0.70
Southbound loop on-ramp from Airport Drive (2009 data)	1	0	0	0.000	0.00	0.45	0.004	0.20	0.70
Northbound directional on-ramp from Airport Drive	1	0	0	0.000	0.00	5.35	0.003	0.20	0.65
Southbound off-ramp to Airport Drive/Pierce Street	3	0	2	0.000	0.97	1.46	0.004	0.42	1.20
Shading indicates accident rates higher than the statewide average for similar highway facilities									

1.3 Project Alternatives

This section describes the alternatives analyzed in this environmental document. The selection of a preferred alternative would be based on how well each alternative is able to meet the purpose and need; physical constraints, including right-of-way requirements and relocations; and the number and type of environmental effects. The alternatives under consideration are the Build Alternative and the No-Build Alternative.

Build Alternative

The Build Alternative would extend Hageman Road from just east of the intersection with Knudsen Drive, cross over State Route 99, and connect with Golden State Avenue. The extension of Hageman Road would be a four-lane road with two 12-foot-wide travel lanes in each direction, a 12-foot-wide median with barrier, and 8-foot-wide outside shoulders. The Knudsen Drive intersection would have signals. A double box culvert structure would be built over the Beardsley Canal lateral, with bridges over the San Joaquin Valley Railroad, and State Route 99. The existing bridge over Airport Drive would be widened, and ramps at the Airport Drive and Golden State Avenue interchange would be modified. The roadway section would transition to match the existing roadway at the west and east ends of the proposed project. A Class I bike path would be added along the south side of the Hageman Road extension, extending to the Rio Mirada Drive/Buck Owens Boulevard intersection. A storm water retention basin would also be built between State Route 99 and the San Joaquin Valley Railroad.

Due to the new connection of Hageman Road to Golden State Avenue, the existing ramps at the Airport Drive and Golden State Avenue interchange would be modified. Golden State Avenue would also be widened to accommodate the modified ramps. The direct connector ramps—northbound Golden State Avenue to northbound State Route 99 and southbound State Route 99 to southbound Golden State Avenue—would be modified to handle the Golden State Avenue improvements and match existing connector ramp configurations.

The existing single-lane northbound Golden State Avenue exit ramp at Airport Drive would be widened to two lanes. The two Airport Drive loop entrance ramps to Golden State Avenue, along with the northbound Airport Drive to southbound Golden State Avenue directional entrance ramp, would be reconfigured to provide standard merging distances onto the northbound State Route 99 connector and southbound Golden State Avenue. The directional entrance ramp from southbound Airport Drive to northbound State Route 99 would be eliminated. A left-turn lane would be added on Airport Drive to provide access to northbound State Route 99 from southbound Airport Drive. A retaining wall would be built along the west side of the northbound Airport Drive to southbound Golden State Avenue direct on-ramp.

In the northbound direction, starting about 50 feet north of the Calloway Canal, Golden State Avenue would transition to four lanes. The outside lane would become a dedicated exit lane at the northbound off-ramp to Airport Drive, leaving three lanes to the north of this point. At the northbound State Route 99 off-ramp, the outside lane would again become a dedicated

exit lane, leaving two through lanes to the north of this point for the remainder of the Hageman Road extension.

The purchase of new right-of-way would be required for the Hageman Road extension west of State Route 99. Right-of-way acquisitions would also be required along the southbound Golden State Avenue direct on-ramp from Airport Drive and along northbound Golden State Avenue south of the off-ramp to Airport Drive.

The Class I bike path would begin at the Knudsen Drive and Hageman Road intersection and extend along southbound Hageman Road, cross over the San Joaquin Valley Railroad line and then go east of the southbound State Route 99 to the southbound Golden State Avenue connector ramp. The path would cross over State Route 99, divert south along the west side of the State Route 99 right-of-way, and go under the southbound State Route 99 on-ramp. From this point, the path would go between southbound State Route 99 to the Rio Mirada/Buck Owens Boulevard intersection. The bike path would have an all-weather paved surface at least 8 feet wide that would allow two-way bicycle traffic and pedestrians. In areas where the path is next to Hageman Road, a barrier would separate it from the roadway.

The cost of the Build Alternative is estimated at $52 million: $49 million for construction and $3 million for right-of-way acquisitions (one full acquisition of a business and six partial acquisitions) and utility relocation. The Build Alternative would be built with mostly local funds.

The project would be built in the following stages:

- The new section of Hageman Road between Knudsen Drive and Golden State Avenue would be built; the south side of Golden State Avenue would be widened; the Airport Drive on-ramps to southbound Golden State Avenue would be reconfigured; and new Airport Drive undercrossing would be built on the south side.
- The new Airport Drive undercrossing bridge on the north side would be built; the current southbound Airport Drive on-ramp to northbound Golden State Avenue would be removed; and the northbound Golden State Avenue on-ramp from northbound Airport Drive and off-ramp to Airport Drive would be reconfigured.

As part of Caltrans' public information procedures, the community would be informed of the project's progress and be notified when traffic conditions change. In addition, a Traffic Management Plan would be used to minimize traffic impacts during construction. Most of the construction activities would occur during daytime hours, with temporary roadway and ramp closures at night for construction of falsework (scaffolding), railings, ramps, and

connector realignments. Long-term closures would be necessary for the Golden State Avenue on-ramps. Construction would take about 24 months to complete. State Route 99 would be open through all stages of construction.

No-Build Alternative

The No-Build Alternative would leave Hageman Road as it is. It would maintain the existing configurations of Hageman Road and Golden State Avenue and would not accommodate future traffic demands. Ramp area improvements to traffic flow would not be built. No additional roadway across State Route 99 in the project area would be constructed, and Olive Drive and Rosedale Highway (State Route 58) would continue to serve as gateways between northwest Bakersfield and the central business district. Accident rates would continue to be higher than the statewide average for similar facilities.

No construction or right-of-way costs are associated with this alternative. The No-Build Alternative would not meet the purpose and need of the project to improve traffic operations and level of service; provide an additional corridor across State Route 99; and relieve traffic congestion and reduce traffic delay.

Comparison of Alternatives

The following criteria for evaluating the project alternatives were identified by a Project Development Team that included members from Caltrans and the City of Bakersfield. The team evaluated how well each alternative would address the purpose and need (new route across State Route 99, reduction in traffic congestion and delay, and improved traffic flow and safety); physical constraints, including right-of-way requirements and relocations; and the number and type of environmental effects. Selection of the preferred alternative would be based on how well the alternative meets these criteria. Table 1.5 provides a comparison of the project alternatives.

Table 1.5 Comparison of Alternatives

Criteria		No-Build Alternative	Build Alternative
Meets Project Purpose and Need			
Provides additional roadway across State Route 99 linking residential communities in northwest Bakersfield with the Bakersfield central business district		No; no additional roadway across State Route 99 in project area would be constructed	Yes; additional roadway across State Route 99 would be built, providing access between northwest Bakersfield and central business district
Improves levels of service on State Route 99 between Olive Drive and Golden State Avenue, State Route 99 southbound ramps at Olive Drive, and the Knudsen Drive/Olive Drive and Knudsen Drive/Hageman Road intersections		No; existing levels of service at these locations would remain or worsen to level of service F by 2035	Yes; 2035 levels of service C and D along State Route 99 and Olive Drive southbound ramps, and Levels of service B and C at Olive Drive/ Knudsen Drive/Hageman Road intersections
Improves interchange and ramp design at the Golden State Avenue/ State Route 99 and Golden State Avenue/Airport Drive interchanges, promoting improved traffic flow and safety		No; no ramp improvements would occur; traffic congestion and accident conditions would not improve	Yes; safety improvements would be constructed and are expected to reduce the number of accidents within the project limits
Physical Constraints			
Right-of-way acquisitions		None	One full and six partial acquisitions
Relocations		None	One business and up to nine utilities
Environmental Footprint and Project Effects (refer to Chapter 2 for complete discussion)			
Land Use	Existing and Future Land Use	No effect	No effect
	Consistency with Metropolitan Bakersfield General Plan, Kern County General Plan and Airport Compatibility Plan	Consistent with Airport Compatibility Plan; inconsistent with other plans	Consistent
Growth		No effect	No effect
Community Character and Cohesion		No effect	No effect
Environmental Justice		No effect	No effect
Utilities/Emergency Services		No effect	No effect
Traffic and Transportation/Pedestrian and Bicycle Facilities		Increased traffic delays along State Route 99 and decreased levels of service	Temporary traffic delays for construction and permanent improvements in State Route 99 main line and ramp levels of service and overall operations. Improved roadway safety conditions. New multi-use bike path segment
Visual/Aesthetics		No effect	Introduction of new visible “flyover” feature in State Route 99 corridor
Cultural Resources		No effect	No adverse effect to National Register-eligible resource
Hydrology and Floodplain		No effect	No effect
Water Quality and Storm Water Runoff		No effect	11.8-acre increase in impervious surface area
Geology/Soils/Seismic/Topography		No effect	Temporary minor erosion potential around the Beardsley Canal and scour at bridge minimized with measures
Paleontology		No effect	Sensitive geologic conditions for fossil resources
Hazardous Waste/Materials		No effect	No substantial effects
Air Quality		No substantial effects	No substantial effects
Noise and Vibration		No effect	No effect

Criteria		No-Build Alternative	Build Alternative
Biological Resources	Natural Communities	No effect	No effect
	Wetlands and Other Waters	No effect	No effect
	Plant Species	No effect	No effect
	Animal Species	No effect	Potential temporary indirect effects to burrowing owl habitat
	Threatened and Endangered Species	No effect	17.7 acres (permanent) and 4.7 acres (temporary) of potential kit fox habitat
	Invasive Species	No effect	No substantial effects
Cumulative Impacts		Reduced levels of service and regional travel delays	Minimal

Overall, the Build Alternative would have a greater potential to affect cultural resources, geology, paleontological resources, hazardous waste/materials, and biological resources; however, the Build Alternative would achieve the objectives of the proposed project.

The Build Alternative would decrease the need for motorists to use various less direct routes such as Olive Drive to State Route 99 and Rosedale Highway to access downtown Bakersfield; use of these routes is expected to increase as growth and development continue and traffic demand increases. The No-Build Alternative would not address the existing traffic delays that are expected to increase as growth and development continue and traffic demand increases. The lack of travel options and congested traffic conditions along this corridor are expected to have a negative effect on the regional transport of goods and services along State Route 99 and the mobility of residents between northwest Bakersfield and the Bakersfield central business district. The No-Build Alternative would not be consistent with the 2011 Regional Transportation Plan and the 2011 Federal Transportation Improvement Program. The transportation plan and the improvement program include construction of the project.

After the public circulation period, all comments will be considered; Caltrans would then 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, if no unmitigable significant adverse impacts are identified, Caltrans would prepare a Negative Declaration or Mitigated Negative Declaration.

Alternatives Considered but Eliminated from Further Discussion

During the project development process, conceptual alternatives were developed, and Transportation system management and transportation demand management strategies were considered.

State Route 99/Golden State Avenue (State Route 204)/Hageman Road Interchange Alternative

The State Route 99/Golden State Avenue (State Route 204)/Hageman Road Interchange Alternative proposed extending Hageman Road as a city road with three lanes in both directions over State Route 99, connecting directly to Golden State Avenue with a full-service interchange and replacing the existing connectors. The alternative would provide full connectivity between Hageman Road and State Route 99, connectivity between Airport Drive and Hageman Road, and potential traffic congestion relief at Olive Drive and Rosedale Highway; however, the alternative would result in substantial delays and poor levels of service on the ramps replacing the State Route 99/Golden State Avenue and State Route 99/Airport Drive connectors. The alternative was eliminated as a viable alternative because of the poor traffic operations.

Transportation System Management, Mass Transit, and Transportation Demand Management Alternatives

Transportation system management, mass transit and transportation demand management strategies were also considered for the project. Transportation system management strategies consist of actions that increase the efficiency of existing facilities; they are actions that increase the number of vehicle trips a highway can carry without increasing the number of through lanes. Examples of transportation system management strategies include ramp metering, auxiliary lanes, turning lanes, reversible lanes, and traffic signal coordination. A transportation system management alternative alone would not fully meet the purpose and need for the project. The Build Alternative would provide a direct-route option for residents in northwest Bakersfield to access downtown Bakersfield while maximizing the use of existing facilities.

A mass transit option that uses existing facilities such as buses would not provide a direct route option for residents in northwest Bakersfield to access downtown Bakersfield and would use the same various less direct routes, adding to existing congested traffic conditions along Olive Drive to State Route 99 and Rosedale Highway; therefore, this alternative would not meet the purpose and need of the project.

A mass transit option that includes new facilities such as light-rail would require long-term planning to effectively integrate the facilities with existing infrastructure, determine connection points that provide the most benefit to the user, and identify and secure funding sources. This option must also be reviewed for inclusion in the regional long-term programming documents that consider overall transportation system planning for metropolitan areas. The plans consider system efficiency, energy conservation, and

environmental protection. Plans must be consistent with air quality goals for the region. Project inclusion in these plans ensures consistency with regional goals for reducing vehicle miles traveled.

A mass transit option connecting the northwest Bakersfield area with downtown Bakersfield is not currently included in the 2011 Federal Statewide Transportation Improvement Program, the Kern Council of Governments 2011 Final Regional Transportation Plan, or the 2011 Federal Transportation Improvement Program. So, funding is not allocated for the option, and the option would need to be evaluated in terms of system efficiency, energy conservation, environmental protection, and consistency with air quality goals for the region, prior to being included in regional long-term programming documents.

Transportation demand management strategies focus on regional strategies for reducing the number of vehicle trips and vehicle miles traveled as well as increasing vehicle occupancy. The strategies help with higher vehicle occupancy or reducing traffic congestion by expanding the traveler's transportation choices in terms of travel method, travel time, travel route, travel costs, and the quality and convenience of the travel experience. Examples of transportation demand management strategies include ride sharing, flexible work hours (flextime), increased transit usage, walking, and bicycling.

Transportation system management or transportation demand management alternatives were eliminated from further consideration as these strategies and associated measures alone would not satisfy the purpose and need of the proposed project. They would not provide sufficient increases in the efficiency of State Route 99, acceptable traffic levels of service, and would not meet most of the project purposes. The following transportation system management and transportation demand management measures, however, have been incorporated into the Build Alternative for the project:

- Right-turn-only lane between the Golden State Avenue northbound off-ramp to Airport Drive and Nadine Lane;
- Additional deceleration lanes and acceleration lanes along Golden State Avenue;
- Left-turn-only lane from southbound Airport Drive to northbound State Route 99; and
- Dedicated exit lanes for northbound Golden State Avenue off-ramps to Airport Drive and State Route 99.

1.4 Permits and Approvals Needed

Table 1.6 Permits and Approvals Needed

Agency	Permit/Approval	Status
U.S. Fish and Wildlife Service	Endangered Species Act Section 7 Biological Opinion	The Biological Assessment was submitted to the U.S. Fish and Wildlife Service in October 2013; the Biological Opinion is pending
California Department of Fish and Wildlife	Fish and Game Code Section 1602 Streambed Alteration Agreement	Application submittal. Need for a 1602 Streambed Alteration Agreement is still under review
San Joaquin Valley Air Pollution Control District	Dust Control Permit (Dust Control Plan) and Approved Air Impact Assessment per Rule 9510, Indirect Source Review Rule 8210, Limits to fugitive particulate matter emissions during construction activities	The permit will be acquired after project approval and before construction
California Public Utilities Commission	GO-88B Permit (Railroad)	Application submittal prior to construction
San Joaquin Valley Railroad	Right of Entry Permit or Contractor Occupancy/Access Agreement Permanent Aerial Easement Construction and Maintenance Agreement	To be submitted after approval of final environmental document

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

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

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

- **Consistency with State, Regional and Local Plans and Programs:** The project is consistent with the current regional transportation plan and program, the 2002 Metropolitan Bakersfield General Plan, the current habitat conservation plan, and the Airport Land Use Compatibility Plan (*Community Impact Assessment*, June 2010).
- **Growth:** An analysis concluded that infill and growth would continue in the project area with or without the project; the project would not change the patterns or timing of that growth (*Community Impact Assessment*, June 2010).
- **Parks and Recreation:** The project would not directly or indirectly affect any park or recreational facility (*Community Impact Assessment*, June 2010).
- **Farmlands/Timberlands:** According to the California Department of Conservation, Division of Land Resources Protection, there are no lands within the study area identified as farmland or timberland. Kern County mapping shows no lands within the study area under a Williamson Act contract (*Community Impact Assessment*, June 2010).
- **Community Character and Cohesion:** The project would not affect community character or cohesion (*Community Impact Assessment*, June 2010).
- **Environmental Justice:** Because the project is along the edge of both the Oildale and Olive Drive communities, it would not cause disproportionately high and adverse effects on any minority or low-income populations as defined in Executive Order 12898 regarding environmental justice (*Community Impact Assessment*, June 2010).

- **Coastal Zone:** The project is not within or near a designated California Coastal Zone (*Community Impact Assessment*, June 2010).
- **Wild and Scenic Rivers:** The project is not in the vicinity of a designated wild and scenic river (*Community Impact Assessment*, June 2010).
- **Hydrology and Floodplains:** The project is not within a 100- or 500-year floodplain (*Water Quality Assessment Study*, January 2010).
- **Noise and Vibration:** A completed noise study determined that noise abatement would not be needed (*Noise Study Report*, February 2010).
- **Natural Communities:** No sensitive vegetation communities or other natural communities of concern are present within the biological study area (*Natural Environment Study*, September 2013).
- **Plant Species:** No special-status plants and suitable habitat are present within the biological study area (*Natural Environment Study*, September 2013).
- **Animal Species:** No special-status animal species were found in the project area (*Natural Environment Study*, September 2013).

2.1 Human Environment

2.1.1 Land Use

Affected Environment

A *Community Impact Assessment* (June 2010) was prepared to provide information on socioeconomic and land use effects of the project. A study area was established to assess the potential for land use impacts as a result of the proposed project; the land use study area includes the project limits plus a half-mile radius around those limits.

Except for unincorporated Kern County land west of State Route 99, the project site is within the city of Bakersfield. Within the unincorporated county area, the project site borders the community of Oildale to the northeast and the Olive Drive neighborhood area to the west. The Oildale neighborhood includes existing commercial uses, Beardsley Canal, and several railroad tracks. Meadows Field Airport is at the northwestern boundary. By contrast, the Olive Drive area consists mostly of existing residential land uses intermixed with commercial and public land uses. The project site and adjacent areas are built up and include existing industrial uses, heavy industry, and related businesses. One public facility use (Kern County

Water Agency) south of Golden State Avenue (State Route 204) is the only non-industrial use.

The Metropolitan Bakersfield General Plan designates the land uses within the study area as mostly industrial, highway, and general commercial with some residential uses on the borders of these areas.

Environmental Consequences

Under the No-Build Alternative, existing and planned land uses in the project area would remain, and incompatible land uses would not occur. The No-Build Alternative would keep Hageman Road and Golden State Avenue (State Route 204) as they are within the project limits. Olive Drive and Rosedale Highway would continue to serve as gateways between northwest Bakersfield and the central business district. Traffic conditions at and between these interchanges would not be alleviated and would worsen in time.

The Build Alternative would require buying new right-of-way. Most of the required right-of-way would be the purchase of parts of vacant parcels, except for industrial and water facilities owned by the Kern County Water Agency. One full parcel acquisition would require the relocation of a truck repair business. An overhead easement would allow building a bridge over the San Joaquin Valley Railroad and a vacant parcel.

Land use designations identified in the Metropolitan Bakersfield General Plan would not change with building the project. According to the Metropolitan Bakersfield General Plan, no substantial growth or change from existing land uses is planned for the project vicinity.

Freeways and roadways are considered an integral part of development and land use patterns because they are required to help travel and connectivity between areas. In this regard, the project would connect two portions of the city of Bakersfield that are growing in density. The project would not diminish access to or the ability to use adjacent vacant land and open spaces, nor would it physically divide an established community because this area is already heavily urbanized. Since the project would connect Hageman Road and Golden State Avenue (State Route 204) directly without affecting access to the area land uses, no changes in development patterns or adopted land use plans would occur. Based on the analysis above, the Build Alternative would not affect land use.

Avoidance, Minimization, and/or Mitigation Measures

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

2.1.2 Relocations and Real Property Acquisition

Regulatory Setting

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

Affected Environment

A Draft Relocation Impact Memorandum was prepared in January 2010, and a Community Impact Assessment was prepared in June 2010.

The western portion of the project site consists of mostly vacant and undeveloped land that stretches to the eastern limit of Hageman Road. This vacant land is designated for industrial uses. The area between the San Joaquin Valley Railroad and State Route 99 is developed with heavy industrial uses. The eastern portion of the project site next to Golden State Avenue is designated for public facility uses.

Environmental Consequences

Under the No-Build Alternative, no acquisition of property or need for long-term or temporary construction easements would occur.

The Build Alternative would not result in the acquisition of any homes. Seven partial property acquisitions and one full acquisition of a business would be required. The acquisitions are listed in Table 2.1.

Table 2.1 Property Acquisition and Displacement

Assessor Parcel Number	Business Name/ Address	Business Type	Type of Acquisition
116-010-232	Tumblin Company 5585 Standard Street	Agriculture-related transportation and equipment storage	Full acquisition
116-110-107	CSS Construction 4550 Buck Owens Boulevard	Steel fabrication and structural steel erection	Partial acquisition
115-120-081	Kern Water Agency 3200 Rio Mirada Drive	Public Facility	Partial acquisition
115-120-09	Kern Water Agency 811 Nadine Lane	Public Facility	Partial acquisition
115-120-04	Kern Water Agency 811 Nadine Lane	Public Facility	Construction easement only
116-010-372	Landco Drive—undeveloped	Undeveloped and public facility—Beardsley Canal No. 1	Partial acquisition
116-010-398	Not available-undeveloped	Undeveloped	Partial acquisition
365-011-53	Not available—northeast corner of Knudsen Drive and Hageman Road	Undeveloped	Partial acquisition

Avoidance, Minimization, and/or Mitigation Measures

The Caltrans Relocation Assistance Program would be used. Refer to Appendix C, Summary of Relocation Benefits, for additional information.

2.1.3 Utilities/Emergency Services

Affected Environment

In the study area, electricity is provided by Pacific Gas and Electric; natural gas, by Southern California Gas Company; and telephone services, by Level 3. The Oildale portion of the study area is served by the North of River Municipal Water District and the Oildale Mutual Water Company. The area north of the Kern River and west of State Route 99 is served by numerous water districts and companies, including California Water Service Company and Ashe Water Company.

Emergency Services

The Kern County Fire Department provides fire, emergency medical, and hazardous materials services. Station 64 (Riverview Station) is about 1 mile from the project site at 101 East Roberts Lane. Station 61 is about 1.2 miles away at 6400 Fruitvale Avenue. The City of Bakersfield Police Department is responsible for providing police services in the

incorporated area of the city. The closest station to the project site is at 1601 Truxtun Avenue. The Kern County Sheriff's Department provides law enforcement services in unincorporated Kern County. Hall Ambulance Service, Inc. provides emergency medical response to the project area; an ambulance response location is near the Columbus Street and Mount Vernon Avenue intersection about 3 miles east of the project area.

Environmental Consequences

Utilities

During construction, the following utility relocations may occur: gas and oil lines (Shell Oil); overhead electric and fiber optic lines (Pacific Gas and Electric Company); and underground fiber optic conduits (Level 3).

Emergency Services

After construction, emergency services in the project area would benefit from a direct east-west roadway across State Route 99, plus reduced congestion.

Avoidance, Minimization, and/or Mitigation Measures

The following avoidance and minimization measures would prevent temporary impacts to emergency access and utilities:

- All utility relocation work would be done by the affected utility companies. Utility users would be informed of the date and time in advance of any service disruptions.
- A Traffic Management Plan would be developed and used (see Section 2.1.4) that would address emergency services traveling through the construction area.

2.1.4 Traffic and Transportation/Pedestrian and Bicycle Facilities

Regulatory Setting

The California Complete Streets Act of 2008 (Assembly Bill 1358) places the planning, designing, and building of complete streets into the larger planning framework of the general plan by requiring jurisdictions to amend their circulation elements to plan for multimodal transportation networks. The Caltrans 2008 Transportation Deputy Directive 64-Revision Number 1 supports compliance with Assembly Bill 1358 by directing Caltrans staff to support increased mobility and access for all Californians on Caltrans-built and -maintained roads. The 2010 Complete Streets Implementation Action Plan was prepared to aid compliance with Assembly Bill 1358 and Transportation Deputy Directive 64-Revision Number 1.

Caltrans is committed to carrying out the 1990 Americans with Disabilities Act by building transportation facilities that provide equal access for all people. The same degree of

convenience, accessibility, and safety available to the general public would be provided to people with disabilities.

Affected Environment

A *Traffic Report for Hageman Road Extension to Golden State Avenue* was prepared in July 2009 and supplemented in January 2010.

As discussed in Section 1.2.2, traffic operations on a transportation facility are measured in terms of level of service. Level of service is defined from level of service A through level of service F. Level of service A is the least congested, and level of service F is the most congested. Level of service E represents "at-capacity" operations. The level of service descriptions are shown in Figures 1-3 through 1-6.

Existing Traffic and Circulation

Circulation is currently limited between residential communities in northwest Bakersfield and employment, business and government centers in the downtown Bakersfield central business district. Existing east-west routes as well as north-south routes that connect with the two main east-west arterials in the vicinity—Olive Drive and Rosedale Highway—are congested and are projected to worsen over the next 10 to 20 years. Hageman Road currently provides relatively effective east-west mobility within northwest Bakersfield but, since the road does not extend into downtown, trips toward the central business district must still be made via Rosedale Highway or Olive Drive.

Segments, ramps, and intersections that are currently level of service D or worse are shown in Tables 2.2 and 2.3. Several northbound ramps are affected during the peak evening hour with traffic spilling back in the right-most lane from the Olive Drive off-ramp. At this off-ramp, traffic slows for turns and merges onto the Olive Drive bridge over State Route 99. The intersections of Olive Drive with Knudsen Drive and Olive Drive with State Route 99 southbound ramps are currently at level of service F during peak hours.

Table 2.2 Existing (2008) Mainline and Ramp Levels of Service

Freeway Segment /Ramp	Existing (2008) Mainline and Ramp Levels of Service	
	Morning Peak Hour	Evening Peak Hour
State Route 99 Northbound		
Buck Owens Boulevard on-ramp to Airport Drive off-ramp	B	C
Buck Owens Boulevard off-ramp	B	C
Airport Drive off-ramp to State Route 204 on-ramp	A	C
Airport Drive off-ramp	C	D
State Route 204 on-ramp to Olive Drive off-ramp	B	D
State Route 204 on-ramp	C	E
Olive Drive off-ramp to Olive Drive on-ramp	A	B
Olive Drive off-ramp	C	F
North of Olive Drive	B	B
Olive Drive on-ramp	B	B
State Route 99 Southbound		
North of Olive Drive	C	C
Olive Drive off-ramp	C	C
Olive Drive off-ramp to Olive Drive loop on-ramp	B	C
Olive Drive on-ramp (loop)	C	C
Olive Drive loop on-ramp to Olive Drive direct on-ramp	C	C
Olive Drive on-ramp (diagonal)	E	E
Olive Drive direct on to State Route 204 off-ramp	D	D
State Route 204 off-ramp	E	E
State Route 204 off-ramp to Airport Drive on-ramp	C	C
Airport Drive on-ramp	C	D
Airport Drive on-ramp to Rosedale Highway off-ramp	C	C
Rosedale Highway off-ramp	C	C
State Route 204 Northbound		
F Street to Airport Drive off-ramp	B	B
Airport Drive off-ramp	B	B
Airport Drive on-ramp (loop)	B	A
Airport Drive on-ramp (diagonal)	B	A
State Route 204 Southbound		
Airport Drive on-ramp to F Street	D	B
Airport Drive on-ramp (loop)	B	B
Airport Drive on-ramp (diagonal)	C	B

Table 2.3 Existing (2008) Intersection Levels of Service

Intersection	Existing (2008) Levels of Service	
	Morning Peak Hour	Evening Peak Hour
Olive Drive/Fruitvale Avenue	B	B
Olive Drive/Knudsen Drive	F	F
Olive Drive/State Route 99 southbound ramps	F	F
Olive Drive/State Road	B	C
State Road/State Route 99 northbound ramps	B	B
Olive Drive/Airport Drive	C	C
Hageman Road/Fruitvale Avenue	C	C
Hageman Road/Knudsen Drive	A	A
Airport Drive/State Road -- State Route 204 northbound off-ramp	C	C
State Route 99 northbound off-ramp -- Airport Drive/Buck Owens Boulevard	B	B
Buck Owens Boulevard/Rio Mirada Drive	C	C
Golden State Road/F Street	F	D

Public Transportation

Public transportation in Bakersfield includes bus, rail, and paratransit service. Golden Empire Transit, Route 3, operates in the project area (Golden Empire Transit 2009). Kern County provides service between Bakersfield and rural areas, while Greyhound and Orange Belt Stages serve other major cities. Airport Bus of Bakersfield provides roundtrip service between Bakersfield and Los Angeles International Airport.

Traffic Accidents

Table 1.4 in Chapter 1 indicates the total accident rate for State Route 99 between Calloway Canal and Olive Drive is nearly 28 percent higher than the statewide average accident rate for similar highway facilities. Most of the accidents occurred in the northbound direction, with the main accident type being rear-end collisions. The total accident rates for three of the Golden State Avenue/Airport Drive interchange ramps are also higher than the statewide average for similar facilities.

Bicycle and Pedestrian Facilities

The portion of Hageman Road through the project area is designated as a Class I bike path in the Metropolitan Bakersfield General Plan Bikeway Master Plan. The Circulation Element of the Metropolitan Bakersfield General Plan also identifies existing and planned bicycle facilities west of Knudsen Drive; Class I bike paths are also identified east of State Route 99 and west of Oildale Drive.

Environmental Consequences

2015 and 2035 Traffic Impacts

The No-Build Alternative would keep the existing ramp connections between Golden State Avenue and State Route 99 and the existing interchange at Golden State Avenue and Airport Drive. This alternative would not extend Hageman Road easterly to connect with Golden State Avenue. Under the No-Build Alternative, traffic is expected to disperse across the highway network as motorists seek alternate routes to avoid congested roadways. This would increase the amount of cut-through traffic within adjacent neighborhoods and would adversely affect other neighboring areas.

The following planned improvements under separate projects are included in the forecast 2035 No-Build and the proposed Build conditions: State Route 99 widening from six lanes to eight lanes between Seventh Standard Road and Golden State Avenue; Golden State Avenue widening from four lanes to six lanes; and a new interchange at F Street.

Table 2.4 indicates that main line State Route 99 would operate at a worse level of service under 2015 and 2035 No-Build conditions when compared with existing 2008 conditions. The analysis indicates that by 2035, the no-build condition would result in very poor and unacceptable levels of service (E and F) along the segments of northbound and southbound State Route 99 between the Olive Drive interchange and the Airport Drive interchange. The segment between Olive Drive and Golden State Avenue would experience level of service E or F conditions in both directions during the morning peak hour or evening peak hour or both.

Compared to existing conditions, the ramp level of service analysis for the 2035 No-Build Alternative in Table 2.5 indicates that ramp merge and diverge operations would deteriorate by at least one level of service and in some cases, two levels of service. About two-thirds of the ramps would operate at level of service E or F. As indicated in Table 2.6, intersection level of service is also projected to be worse in 2035 than with the existing 2008 conditions.

Traffic projections based on regionally adopted land use assumptions and a set of fundable roadway improvements indicate more traffic using Hageman Road and Golden State Avenue when compared to the No-Build Alternative. Under the Build Alternative, traffic volumes would be expected to shift from parallel arterial streets to Hageman Road and Golden State Avenue, thereby relieving congestion on a systemwide basis.

Table 2.4 Existing and Future Main Line Levels of Service—No-Build and Build Alternatives

Freeway Segment	2008 (Existing) Level of Service		Forecasted 2015 Level of Service No-Build Alternative		Forecasted 2015 Level of Service Build Alternative		Forecasted 2035 Level of Service No-Build Alternative		Forecasted 2035 Level of Service Build Alternative	
	Morning Peak Hour	Evening Peak Hour	Morning Peak Hour	Evening Peak Hour	Morning Peak Hour	Evening Peak Hour	Morning Peak Hour	Evening Peak Hour	Morning Peak Hour	Evening Peak Hour
State Route 99 Northbound										
Buck Owens Boulevard on-ramp to Airport Drive off-ramp	B	C	C	D	C	C	D	E	D	D
Airport Drive off-ramp to State Route 204 on-ramp	A	C	C	D	B	C	C	D	C	C
State Route 204 on-ramp to Olive Drive off-ramp	B	D	D	F	C	D	D	F	C	D
Olive Drive off-ramp to Olive Drive on-ramp	A	B	C	D	B	C	C	C	C	C
North of Olive Drive	B	B	C	D	B	C	C	C	C	C
State Route 99 Southbound										
North of Olive Drive	C	C	C	D	D	D	C	D	C	D
Olive Drive off-ramp to Olive Drive on-ramp (loop)	B	C	C	C	C	D	C	C	C	C
Olive Drive on-ramp (loop) to Olive Drive direct on-ramp (diagonal)	C	C	C	D	D	D	C	D	C	C
Olive Drive on-ramp (diagonal) to State Route 204 on-ramp	D	D	F	F	E	E	E	F	D	D
State Route 204 on-ramp to Airport Drive on-ramp	C	C	C	C	C	D	C	D	C	C
Airport Drive on-ramp to Rosedale Highway off-ramp	C	C	D	D	C	D	D	E	D	E
State Route 204 Northbound										
F Street to Airport Drive off-ramp	B	B	B	C	B	C	C	D	C	D
State Route 99 ramps to Knudsen Drive	–	–	–	–	A	B	–	–	B	C
State Route 204 Southbound										
F Street to Airport Drive off-ramp	D	B	D	C	B	B	D	D	C	C
Knudsen Drive to State Route 99 ramps	–	–	–	–	C	C	–	–	D	D

– = Facility does not currently exist and assumed not constructed under future No-Build conditions; therefore, data unavailable.

Table 2.5 Existing and Future Ramp Levels of Service—No-Build and Build Alternatives

Freeway Segment/Ramp	2008 (Existing) Level of Service		Forecasted 2015 Level of Service No-Build Alternative		Forecasted 2015 Level of Service Build Alternative		Forecasted 2035 Level of Service No-Build Alternative		Forecasted 2035 Level of Service Build Alternative	
	Morning Peak Hour	Evening Peak Hour	Morning Peak Hour	Evening Peak Hour	Morning Peak Hour	Evening Peak Hour	Morning Peak Hour	Evening Peak Hour	Morning Peak Hour	Evening Peak Hour
State Route 99 Northbound										
Buck Owens Boulevard off-ramp	B	C	C	D	B	C	C	D	C	D
Airport Drive off-ramp	C	D	D	E	D	D	E	E	E	E
State Route 204 on-ramp	C	E	D	F	C	D	D	F	D	D
Olive Drive off-ramp	C	F	E	F	D	E	E	F	D	E
Olive Drive on-ramp	B	B	C	C	C	C	C	C	C	C
State Route 99 Southbound										
Olive Drive off-ramp	C	C	D	D	D	D	C	D	C	D
Olive Drive on-ramp (loop)	C	C	D	D	C	D	C	C	C	C
Olive Drive on-ramp (diagonal)	E	E	F	F	E	E	D	F	D	C
State Route 204 off-ramp	E	E	F	F	E	E	F	F	E	E
Airport Drive on-ramp	C	D	D	D	D	D	C	D	D	C
Rosedale Highway off-ramp	C	C	D	D	C	D	D	E	D	E
State Route 204 Northbound										
Airport Drive off-ramp	B	B	C	C	B	B	D	E	A	B
Airport Drive on-ramp (loop)	B	A	B	B	–	–	B	C	–	–
Airport Drive on-ramp (diagonal)	B	A	B	B	–	–	C	C	–	–
State Route 204 Southbound										
Airport Drive on-ramp (loop)	B	B	C	C	–	–	C	C	–	–
State Route 99 on-ramp	–	–	–	–	C	B	–	–	C	C
Airport Drive (diagonal)	C	B	D	C	D	C	D	D	C	C

– = Facility does not currently exist and assumed not constructed under future No-Build conditions; therefore, data unavailable.

Table 2.6 Existing and Future Intersection Levels of Service—No-Build and Build Alternatives

Intersection	2008 (Existing) Level of Service		Forecasted 2035 Level of Service No-Build Alternative		Forecasted 2035 Level of Service Build Alternative	
	Morning Peak Hour	Evening Peak Hour	Morning Peak Hour	Evening Peak Hour	Morning Peak Hour	Evening Peak Hour
Olive Drive/Fruitvale Avenue	B	B	C	D	C	D
Olive Drive/Knudsen Drive	F	F	F	F	C	C
Olive Drive/ State Route 99 southbound ramps	F	F	F	F	A	B
Olive Drive/State Road	B	C	C	C	C	C
Olive Drive/ State Route 99 northbound ramps	B	B	B	B	C	B
Olive Drive/Airport Drive	C	C	C	D	C	D
Hageman Road/Fruitvale Avenue	C	C	C	C	C	C
Hageman Road/Knudsen Drive	A	A	C	F	B	C
Airport Drive/State Road/ State Route 204 westbound ramps	C	C	C	C	C	C

The project would improve State Route 99 main line level of service conditions between Olive Drive and State Route 204 (see Table 2.4). All mainline sections would operate at level of service D or better but, overall, level of service would deteriorate between 2008 and 2035. Daily travel statistics produced by the 2007 Kern Council of Governments Regional Travel Demand Model for 2035 No-Build and Build Alternatives indicate that overall daily vehicle miles traveled would decline for the Build Alternative compared to the no-build condition. Vehicle hours traveled would also decline in the same pattern as vehicle miles traveled.

The Build Alternative would allow for more vehicles to cross State Route 99 compared with the No-Build Alternative, thereby resulting in an overall reduction in vehicle miles traveled on the roadway network. Speeds in 2035 are expected to remain at or above 60 miles per hour within the limits of the study area for all but one segment (southbound State Route 99 from the Airport Drive on-ramp to the Rosedale Highway off-ramp) under the Build Alternative.

A comparison of projected 2035 main line, ramp and intersection levels of service of “With Project (Build Alternative)” and “Without Project (No-Build Alternative)” conditions are presented in Tables 2.4, 2.5, and 2.6. This data reflects an overall improvement in traffic conditions in 2035 under the proposed Build Alternative (With Project) when compared to the No-Build (Without Project) condition.

Compared to the 2035 No-Build Alternative, the Build Alternative would improve ramp performance in 2035; less than 40 percent of the ramps would operate at level of service E or F under the Build Alternative.

Ramp operations would improve because a lower percentage of main line and ramp traffic would be using State Route 99 to make the short trip between Olive Drive and Golden State Avenue. While this diversion of traffic would be backfilled by other motorists using the available roadway capacity, weaving movements (motorists switching lanes) on State Route 99 are expected to decrease, particularly between Olive Drive and Golden State Avenue. This improvement could potentially result in fewer sideswipe collisions because freeway speeds in all lanes would be similar, reducing the likelihood that motorists change lanes to maintain desired speeds.

Public Transportation

The No-Build Alternative would result in increased congestion and deterioration in level of service, which would adversely affect public bus services with routes in the local area.

The project may benefit public transportation by providing a roadway that a potential future bus route could use for an east-west route between northwest Bakersfield and the central business district. In addition, a reduction in traffic congestion on nearby city streets would benefit transit vehicle mobility and riders by reducing travel delays.

The Amtrak rail right-of-way is beyond the project area, so no project impacts would occur.

Traffic Accidents

The No-Build Alternative would not make improvements that would help reduce traffic congestion and delays in the project area. Accident rates along State Route 99 between the Calloway Canal and Olive Drive and the Golden State Avenue/Airport Drive interchange ramps would continue to be higher than average and possibly worsen with increasing traffic from the growing local population.

The project would be expected to improve safety and reduce congestion-related accidents by reducing traffic congestion and improving traffic flow along State Route 99 from the Golden State Avenue interchange to the Golden State Avenue/Airport Drive interchange. The following proposed safety improvements are planned and would reduce the number of accidents within the project limits:

- Removing the southbound Airport Drive slip ramp to northbound State Route 99, eliminating a potential non-standard lane-change distance between the ramp and the northbound Golden State Avenue to the State Route 99 connector.
- Ramping up traffic for the northbound loop on-ramp; increasing safety for pedestrians and bicyclists by eliminating a free right movement from northbound Airport Drive

traffic using the northbound loop on-ramp; and widening the shoulders to the standard 5 feet for most of the project limits.

- Building a right-turn-only lane between the Golden State Avenue northbound off-ramp to Airport Drive and Nadine Lane, separating the turning traffic from the northbound through traffic on Airport Drive.
- Building a barrier between the southbound Airport Drive on-ramps and the Golden State Avenue main line to eliminate lane changes between the two traffic flows.

Bicycle and Pedestrian Facilities

The No-Build Alternative would not construct the new bicycle lane along Hageman Road. With the exception that an additional bike path segment would not be built for this area, there would be no impacts to existing bicycle and pedestrian facilities.

Under the Build Alternative, a Class I bicycle facility would be provided and would be designed to be consistent with and support the continuity of existing and planned bikeway system facilities in the project area. The multi-use path would also allow pedestrian use.

Avoidance, Minimization, and/or Mitigation Measures

- A Traffic Management Plan would be prepared. The plan would include the following elements: public information/public awareness; designation of haul routes for construction-related trucks; the location of access to the construction site; driveway turn restrictions; temporary traffic control devices or flagmen; travel time restrictions for construction-related traffic to avoid peak travel periods on selected roadways; and designated parking and staging areas for workers and equipment. Before construction, the Traffic Management Plan would be provided to emergency service providers and school officials with construction plans.
- A Construction Zone Enhanced Enforcement Program may be used during project construction. The program involves the presence at all times of the California Highway Patrol in construction zones to remind motorists to slow down and use caution when traveling through work areas.

2.1.5 Visual/Aesthetics

Regulatory Setting

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

A *Visual Impact Assessment* (April 2010) was prepared for the proposed project. The formula for assessing visual quality is shown below.

(Vividness + Intactness + Unity) ÷ 3 = Overall Visual Quality

Vividness is the visual power or memorability of landscape components as they combine in striking and distinctive visual patterns. *Intactness* is the visual integrity of the natural and human-made landscape and its freedom from encroaching elements. *Unity* is the visual coherence and compositional harmony of the landscape considered as a whole. When combined, the factors that establish the visual quality of a view (vividness, unity, and intactness) are used to generate a numeric score, from 1 to 5, with 1 being the lowest and 5 being the highest, for each of a project's key observation points. These scores are added and then divided by 3 to get the overall visual quality score.

The landscape surrounding the project is mostly broad flat expanses of land typical of the southern San Joaquin Valley. The far-off Greenhorn and Piute Mountain ridgelines are visible, but not a strong element due to their distances. Existing single-story structures, telephone poles, and power towers are also present. Views are low to moderate quality.

There are some residences in the vicinity of the project area; however, most views of the project are obstructed by topography, screening walls, landscaping, and/or buildings. Visual quality is low-to-moderate. Neither State Route 99 nor Golden State Avenue has been labeled a scenic corridor, nor are they under consideration for a designation as a scenic corridor.

Environmental Consequences

The proposed extension of Hageman Road would begin as an at-grade, six-lane roadway feature and gradually become elevated atop concrete pillars as it approaches State Route 99 and Golden State Avenue. The extension would reach a maximum of about 30 feet above the existing grade. Incorporation of the proposed improvements, including the introduction of a new "flyover" feature in the views, the loss of some mature landscape features, an increase in concrete/asphalt paving, and new shading of the area due to overhead highway features would contrast with the existing visual character.

Motorists who would be traveling beneath the proposed "flyover" on a regular basis are potentially a moderately sensitive viewer group**,** given the removal of a noticeable portion of the landscaping at the "flyover" and the moderately vivid character this landscaping conveys. It is anticipated, however, that these motorists would be less sensitive to the new shading component introduced by the new Hageman Road extension "flyover." Where new vertical

elements are proposed, such as the "flyover" component to Golden State Avenue, the elements would not exceed the height of existing vertical interchange elements substantially; so, no key views would be adversely affected by the project.

Long-term visual impacts of the project were determined by assessing the visual quality change caused by the project and by predicting viewer response to that change, according to the following formula:

Proposed Visual Quality Score – Existing Visual Quality Score = Visual Quality Change

The change in visual quality at each key observation point is shown in Table 2.7.

Table 2.7 Visual Quality at Key Observation Points

Location	Vividness	Intactness	Unity	Visual Quality Rating (V+I+U)/3	Visual Quality	Visual Quality Change
Key Observation Point 1	2	1	2	1.66	Low	Minor
Key Observation Point 2	1	2	1	1.33	Low	None
Key Observation Point 3	2	1	2	1.66	Moderately Low	Moderate
Key Observation Point 4	5	3	4	4	Moderately High	None
Key Observation Point 5	4	2	3	3	Moderate	None
Key Observation Point 6	1	1	1	1	Low	Minor

Key Observation Point 1: Hageman Road at Knudsen Drive looking Southeast to Project. Viewers include only motorists. Visual quality would be reduced slightly from moderately low to low (a change of -0.33 point). The change in visual quality is shown in Table 2.7. Figure 2-1 compares the view in Key Observation Point 1 as it appears at present with how it would look with the project.

Key Observation Point 2: State Road Looking South to Project Off-Ramp (Airport Drive). Viewers include motorists and residents. Visual quality would remain low because changes would be minor and largely unnoticeable; no key views would be affected. Figure 2-2 compares the view in Key Observation Point 2 as it now appears with how it would look with the project.

Key Observation Point 3: Southbound Golden State Avenue Transition from State Route 99, Looking Southeast. The removal of landscaping and a small increase in the amount of paving and shading from overhead highway features would occur. Visual quality

would be reduced from moderate to moderately low (-1.34). Figure 2-3 compares the current view with the proposed "flyover" at this location.

Key Observation Point 4: Looking Southwest along Calloway Canal toward Golden State Avenue. Due to its distance, the project would not be noticeable at this location and would not contrast with existing visual character. The change in visual quality is shown in Table 2.7.

Key Observation Point 5: Looking Northwest to Golden State Avenue along the south bank of the Kern River, adjoining the Metro Recreation Center. Due to constrained sightlines and its distance away (approximately 0.3 to 0.4 mile), the improvements proposed by the project would not be discernible at this location. As shown in Table 2.7, visual quality would not change.

Figure 2-1 Existing and Simulated Views Southeast from Hageman Road at Knudsen Drive

Figure 2-2 Existing and Simulated Views South from State Road

Figure 2-3 Existing and Simulated Views Southeast from Southbound State Route 99

Few lighting features exist, and limited new lighting is proposed. Glare is rare within the project's visual setting. Highway features and most buildings and objects in the project area have exterior surfaces with low potential for glare; the building windows produce negligible glare. Most buildings in the area are one-story, and the elevated segments of the highway would not produce substantial shade/shadow effects, so sensitive viewers such as residents would not be affected by this issue. The project would not introduce new structural elements that would substantially block any existing views that exhibit high visual quality.

Construction would be visible to some industrial properties and a small number of residential properties, as well as to motorists. The sensitivity of residents is expected to range from low to moderate. Motorists would see removal of some roadway landscaping that includes low-lying vegetation and mature trees, as well as construction activities and staging. Lighting used during evening construction activities would conform to Caltrans lighting standards; all such fixtures would be directed and shielded to avoid spillover light effects.

Neither of the two highways is a scenic corridor, and views along the roads are generally of low to moderately low visual quality. Most of the motorists are commuters and truck drivers rather than persons driving for pleasure. Such motorists are therefore likely to have a relatively high tolerance level for minor construction-related impacts.

Avoidance, Minimization, and/or Mitigation Measures

- The new road extension would be designed to appear continuous with the existing roadway at Hageman Road and Landco Drive and at the Airport Drive and Golden State Avenue off- and on-ramps.
- Highway right-of-way landscaping such as trees and other vegetation that is removed would be replaced at a rate, size, and location determined by the Caltrans district landscape architect. New and/or replacement of existing irrigation systems would be placed at the direction of the Caltrans district landscape architect.
- Lighting would be directed away from homes.

2.1.6 Cultural Resources

Regulatory Setting

The term "cultural resources" as used in this document refers to all "built environment" resources such as buildings, bridges, railroads, and water conveyance systems, culturally important resources, and archaeological resources (both prehistoric and historic), regardless of significance. The following laws and regulations deal with cultural resources.

Historical resources are considered under the California Environmental Quality Act and the California Public Resources Code Section 5024.1, which established the California Register of Historical Resources. Public Resources Code Section 5024 requires state agencies to identify and protect state-owned resources that meet National Register of Historic Places listing criteria. It further specifically requires Caltrans to inventory state-owned structures in its rights-of-way. Sections 5024(f) and 5024.5 require state agencies to provide notice to and consult with the State Historic Preservation Officer before altering, transferring, relocating, or demolishing state-owned historical resources that are listed on or are eligible for inclusion in the National Register or are registered or eligible for registration as California Historical Landmarks.

Affected Environment

The information in this section is from the *Historic Property Survey Report* (September 2011).

Archaeological and architectural field surveys were done for the project. No archaeological sites were found. Properties less than 45 years old or substantially altered were exempted from evaluation in accordance with the Caltrans Section 106 Programmatic Agreement. Three bridges listed as not historic in the Caltrans Historic Highway Bridge Inventory were present: State Route 99/Golden State Avenue Connector Overcrossing (Bridge No. 50 0254F), Airport Drive Undercrossing (Bridge No. 50 0475), and Airport Drive Overcrossing (Bridge No. 50 0266).

One resource, a portion of which is within the project area of potential effects, meets National Register of Historic Places criteria. Historically known as U.S. Highway 99, the resource is a 6.18-mile-long segment of Golden State Avenue identified as KER-204 (Historic U.S. Highway 99) determined eligible for listing in the National Register. Eligibility is at the state level under Criterion A for the roadway's association with early to mid-20th century highway construction and the associated commercial development from placement of a vehicular transportation corridor through the Bakersfield area. KER-204 (Historic U.S. Highway 99) extends from post mile 0.04 (south junction of Brundage Lane) to post mile 6.22 (just north of the Largo Cattlepass). Only the northernmost 0.31 mile of the resource is within the area of potential effects.

In a September 21, 2010 letter, as part of the proposed relinquishment of State Route 204, the State Historic Preservation Officer concurred with the National Register-eligible status of KER-204 (Historic U.S. Highway 99). KER-204 is also listed on the California Register of Historic Places. On December 13, 2011, the State Historic Preservation Officer re-affirmed

this determination and, at Caltrans' request, corrected the historic property boundaries from post miles 0.04 to 6.54 to the current post miles 0.04 to 6.22.

The following features of KER-204 within the project area of potential effects are from the period of significance (1933 to 1963) and contribute to the eligibility of the resource: 1953 four-lane divided and elevated highway; three reinforced concrete box-culvert cattle undercrossings built in 1933 (Gaynor cattle pass, unnamed culvert/crossing, and Largo cattle pass); 1953/1954 pitched earthen berm that elevates portions of the roadway; and adjacent landscaping with numerous mature eucalyptus trees. The elevated visibility afforded by the berm, combined with the tree specimens themselves, is part of a view that has retained integrity from the period of significance.

Environmental Consequences

The project would widen the northernmost 0.31 mile of the 6.18-mile-long historic segment of Golden State Avenue from four lanes to six lanes. Two of the three cattle passes would be buried. Portions of the 1953/1954 pitched earthen berm would be buried under the widened roadbed and roadway shoulders, and other portions removed for a new retaining wall. Mature landscaping would be removed. The project would have no effect on the remaining 5.87 miles of the 6.18-mile-long historic property.

Because the project entails the abandonment in place of two contributing elements and the modification of a third, Caltrans has applied the Criteria of Adverse Effect set forth in 36 Code of Federal Regulations 800.5(a)(1). Over time, recurring repairs and replacements have the potential to affect the integrity of the historic property, but a threshold for such loss of integrity through the incremental loss of individual contributing elements has never been established. Caltrans has accordingly taken this potential for cumulative effects into account in applying the Criteria for Adverse Effect.

As contributing resources, the cattle passes represent the least complex and impressive of the historic property's features in terms of their design, engineering, and visual impact. Cattle passes are a type of construction similar culverts, which are common features on highways throughout California. The land uses that required the use of cattle passes in the location next to the historic property have long vanished. As minor engineering features, the cattle passes were built according to Division of Highways standard specifications, using commonly practiced methods and materials. These methods are well understood, and the resources do not have the potential to shed a unique or unusual light on road engineering as practiced in the 1930s in California. Lastly, the significance of the property is derived in relation to its historic use as part of an interregional transportation network. The location of the features to

be abandoned in place or altered is in an area that has largely been unnoticed by the motorists using the facility throughout its historic use.

The combination of the proposed abandonment in place of two cattle crossings, modification of a third cattle crossing and removal and replacement of vegetation represents a very minor loss (less than 5%) to the historic property as a whole, and considering the limited visibility of the features from the roadway. Likewise, the proposed abandonment in place and alteration of these features would not adversely affect remaining characteristics that qualify State Route 204 for eligibility for listing in the National Register.

Caltrans has assessed the effect of the project on State Route 204 as a whole and proposes that a finding of No Adverse Effect without Standard Conditions is appropriate.

Avoidance, Minimization, and/or Mitigation Measures

The following measures would be implemented:

- Prior to the start of work that would affect any characteristics that qualify Historic U.S. Highway 99 as a historic property, Caltrans would ensure that the recordation measures described below are completed:
    - Caltrans shall take large-format (4 inch by 5 inch or larger negative size) photographs within the Area of Potential Effects including the existing highway segment and associated features—Largo, Gaynor, and Unnamed cattle passes. Photographs shall be processed for archival permanence in accordance with the Historic American Engineering Record photographic specifications. Views of the segment of the Historic U.S. Highway 99 within the Area of Potential Effects shall include: contextual views showing the highway in its setting; details of unique or representative features or detailing, including Largo, Gaynor and Unnamed cattle passes; overviews of the property and contributors setting and vegetation.
    - Caltrans would complete a written historic and descriptive report for the segment of Historic U.S. Highway 99 within the Area of Potential Effects, including the Largo, Gaynor and Unnamed cattle passes. This report would provide a physical description of the property, discuss its construction and its significance under applicable National Register of Historic Places criteria, and address the historical context for its construction following the format and instructions in the September 1993 National Park Service *Historic American Engineering Record Guidelines for Preparing Written and Descriptive Data* guidelines for written documentation.

  - Upon completion, copies of the documentation shall be retained by Caltrans District 6 and offered to the California Office of Historic Preservation/Southern San Joaquin Valley Information Center, the Walter Stiern Special Collections Library at California State University, Bakersfield, the Jack Maguire Local History Room at the Beale Memorial Library in Bakersfield, and the California Room of the California State Library in Sacramento.

- If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area would be diverted until a qualified archaeologist could assess the nature and significance of the find.
- If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities must cease in any area or nearby area suspected to overlie remains, and the county coroner contacted. Pursuant to Public Resources Code Section 5097.98, if the remains are thought to be Native American, the coroner would notify the Native American Heritage Commission, which would then notify the Most Likely Descendent. At this time, the person who discovered the remains would contact Caltrans District 6, Cultural Studies Environmental Branch, so that cultural resource staff may work with the Most Likely Descendent on the respectful treatment and disposition of the remains. Further provisions of Public Resources Code Section 5097.98 are to be followed as applicable.

2.2 Physical Environment

2.2.1 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. The act is known today as the Clean Water Act. The objective of the Clean Water Act is “to restore and maintain the chemical, physical, and biological integrity of the Nation’s waters.”

Congress has amended the act several times. In the 1987 amendments, Congress directed dischargers of storm water from municipal and industrial/construction point sources to comply with the National Pollutant Discharge Elimination System permit scheme. The following are important Clean Water Act sections:

- Sections 303 and 304 require states to promote 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 discharge (except from 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 the discharge of storm water from industrial/construction and municipal 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 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 authorize a variety of minor project activities with no more than minimal effects.

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 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 the U.S. Environmental Protection Agency's Section 404 (b)(1) Guidelines (U.S. Environmental Protection Agency Code of Federal Regulations 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 less adverse effects. The guidelines state that the U.S. Army Corps of Engineers may not issue a permit if there is a least environmentally damaging practicable alternative to the proposed discharge that would have fewer 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. 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 Code of Federal Regulations 320.4. A discussion of the least environmentally damaging practicable alternative determination, if any, for the document is included in the Wetlands and Other Waters section.

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 such as groundwater and surface waters not considered waters of the United States. Also, it prohibits discharges of "waste." 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 on water quality standards in a project area are contained in the applicable Regional Water Quality Control Board Basin Plan. States designate beneficial uses for all water body segments and then set criteria necessary to protect these uses. Consequently, the water quality standards developed for particular water segments are based on the designated use and vary depending on such use. In addition, each state identifies waters failing to meet standards for specific pollutants, which 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 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, water pollution control, and water quality functions throughout the state. 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 Pollution Discharge Elimination System Permit

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. The U.S. Environmental Protection Agency defines a Municipal Separate Storm Sewer System 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 are designed or used for collecting or conveying storm water. The State Water Resources Control Board has identified Caltrans as an owner/operator of Municipal Separate Storm Sewer Systems.

The National Pollutant Discharge Elimination System 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. Permit requirements remain active until a new permit has been adopted.

The Caltrans Municipal Separate Storm Sewer Systems Permit, 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 use a year-round program in all parts of the state to effectively control storm water and non-storm water discharges.

Caltrans storm water discharges must meet water quality standards through use of permanent and temporary (construction) best management practices and other measures.

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 using 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 would be programmed to follow the guidelines and procedures outlined in the latest Storm Water Management Plan to address storm water runoff.

The Storm Water Data Report and its associated checklists are part of the Storm Water Management Plan. The Storm Water Data Report documents the relevant storm water design decisions made about project compliance with the MS4 National Pollutant Discharge Elimination System permit. The preliminary information in the Storm Water Data Report prepared during the Project Initiation Document phase would be reviewed, updated, confirmed, and, if required, revised in the Storm Water Data Report prepared for the later phases of the project. Information contained in the Storm Water Data Report may be used for more informed decisions when selecting of best management practices and/or recommended avoidance, minimization, or mitigation measures to address water quality impacts.

Construction General Permit

The Construction General Permit (Order No. 2009-009-DWQ, as amended by 2010-0014-DWG), adopted on November 16, 2010, became effective on February 14, 2011. 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 results in soil disturbance of at least 1acre must comply with the provisions of the General Construction Permit. Construction activity that results in soil disturbances of less than 1acre 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 storm water pollution prevention plans; to use sediment, erosion, and pollution prevention control measures; and to obtain coverage under the Construction General Permit.

The 2009 Construction General Permit separates projects into Risk Levels 1, 2, or 3. Risk levels are determined during the planning and design phases and are based on potential erosion and transport to receiving waters. Requirements apply according to the determined risk level. For example, a Risk Level 3 (highest risk) project would require compulsory storm water runoff pH and turbidity monitoring, plus 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 use an effective Storm Water Pollution Prevention Plan. In accordance with Caltrans Standard Specifications, a Water Pollution Control Plan is necessary for projects with 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 be in compliance 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 associated with a project. As a result, the Regional Water Quality Control Board may 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 to address both permanent and temporary discharges of a project.

Affected Environment

The information in this section is from the *Final Water Quality Assessment* (January 2010), and *Final Preliminary Geotechnical Design Report* (December 2009).

The project site is within the Tulare Lake Basin under jurisdiction of the Central Valley Regional Water Quality Control Board (Region 5). There are three existing main infiltration basins at the State Route 204/Airport Drive interchange area and one at the southeast corner of State Route 99 and San Joaquin Valley Railroad intersection. Multiple water basins serve each small subdivision. The Kern River, a main water body in the vicinity is a half-mile south of the project limits; it is not listed as an impaired water body by the Clean Water Act, Section 303(d), nor does it have established total maximum daily loads.

Golden State Avenue currently spans a bridge over the Calloway Canal. The Calloway Canal flows southwest and is used for Kern River overflow, crop irrigation, and water district distribution. The Beardsley Canal lateral west of the project serves the same purposes as the Calloway Canal. Surface water flow directions in the project area are varied and are influenced by the presence of the Beardsley Canal to the west and the Calloway Canal and

Kern River to the south. Surface water beneficial uses of the Tulare Lake Basin are agricultural use; industrial service supply; industrial process supply; water contact recreation; non-water contact recreation; warm freshwater habitat; wildlife habitat; rare, threatened, or endangered species; and groundwater recharge.

Groundwater was encountered at about 20 feet deep at the Airport Drive undercrossing area in 1989 and 1990. Groundwater beneficial uses of the Tulare Lake Basin are municipal and domestic supply; agricultural use; industrial service apply; industrial process supply; water contact recreation; non-water contact recreation; and wildlife habitat.

Environmental Consequences

Paved impervious surface area would permanently increase by about 11.8 acres to a total of 24.3 acres, resulting in a greater volume and rate of runoff flow. Runoff would be retained onsite by means of two existing infiltration basins near Airport Drive and one basin at the southeast corner of the State Route 99 and San Joaquin Valley Railroad intersection. A new infiltration basin is also proposed at the west side of Knudsen Drive on the south side of proposed Hageman Road. Runoff would be collected via a series of catch basins and conveyed in a storm drain piping system prior to final discharge into the proposed and existing infiltration basins.

Construction activities would involve a new roadway and associated grading; existing pavement reconstruction and overlay; demolition of a portion of existing superstructure; materials transport; use of heavy equipment and vehicles containing fuels and petroleum products; drilling and blasting for foundations; and vegetation removal and re-vegetation. The vertical extent of disturbance consists of grading to a depth of 10 to 15 feet, with pile driving extending to a depth of 60 to 70 feet. The project would generate a substantial amount of fill slope from the Hageman Road flyover to the existing ground. The project would disturb about 38.2 acres of pervious soil and impervious paved surfaces.

Reduction in pervious surfaces may increase the erosion and sediment transport during periods of heavy rain and wind. Storm water runoff would carry these sediments to the existing and proposed storm drain facilities around the project site. The following are other sources of storm water pollution: delivery, handling and storage of construction materials and wastes; spills and leaks from heavy equipment and machinery; tracking of dirt and pollutants via equipment and vehicle traffic; staging areas for the use of paints, solvents, cleaning agents, and metals during construction; hazardous materials from demolition of existing structures; spilled concrete; and temporary and permanent vegetation requiring irrigation with fertilizers and pesticides.

Avoidance, Minimization, and/or Mitigation Measures

The following avoidance and minimization measures would be used:

- Comply with Central Valley Regional Water Quality Control Board policies for soil-disturbing activities.
- Obtain a California Department of Fish and Game Code 1602 Streambed Alteration Agreement (if California Department of Fish and Wildlife takes jurisdiction over Beardsley Canal).
- Implement Design Pollution Prevention and Treatment best management practices in accordance with the latest version of Caltrans' *Storm Water Quality Handbook: Project Planning and Design Guide*.
- Provide best management practices as called for in a Storm Water Pollution Prevention Plan, in compliance with the Caltrans Statewide National Pollutant Discharge Elimination System Permit and any subsequent permit or individual permit, if required. A Notice of Intent would be submitted to the State Water Resources Control Board at least 30 days prior to the start of construction. Upon completion of work and the stabilization of all disturbed areas, a Notice of Termination would be submitted to the State Water Resources Control Board.
- Use biofiltration swales/strips along the toe of slope where applicable. This is in addition to infiltration basins as treatment best management practices.

2.2.2 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 relating 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 hazards for Caltrans projects. The current policy is to use the anticipated maximum credible earthquake, from young faults in and near California. The maximum credible earthquake is defined as the largest earthquake expected to occur on a fault over a particular period.

Affected Environment

Unless otherwise noted, the information in this section is from the *Final Preliminary Geotechnical Design Report* (December 2009), *Final Preliminary Materials Report* (December 2009), and *Final Initial Site Assessment* (January 2010.

The project site is in the Great Valley Geomorphic Province of California underlain by Pleistocene non-marine sedimentary deposits and recent alluvial fan deposits. Groundwater was documented generally below the potentially liquefiable sand layers; therefore, the potential for liquefaction (a condition where the soil loses its foundation and turns to a jellylike substance) is considered low.

The study area has been seismically active. The most prominent regional fault is the San Andreas Fault. Other fault systems include the Breckenridge, Kern Canyon, Garlock, and White Wolf faults. The Kern Front fault, the closest fault to the project, is about 3 miles north. This fault has a maximum credible earthquake magnitude of 7.8.

No sand or gravel mines are in the project vicinity, but the project site is within an area designated "Oil Field" on the Metropolitan Bakersfield General Plan's Known Mineral Resources map.

Environmental Consequences

Seismic ground shaking has the potential to cause settlement of the ground surface; however, the potential at the site is low. The potential for seismic slope instability would be nonexistent for newly constructed embankments. Post-construction settlement of the approach fill is expected to be less than 1 inch.

Avoidance, Minimization, and/or Mitigation Measures

The following avoidance and minimization measure would be used in addition to Water Quality measures in Section 2.2.1: Additional exploratory borings would be collected and tested to log soil conditions and develop final recommendations as part of the final *Geotechnical Design Report* and design-level *Materials Report*. The avoidance and minimization measures would be incorporated into the project design.

2.2.3 Paleontology

Regulatory Setting

Paleontology is the study of life in past geologic time based on fossil plants and animals. A number of federal statutes specifically address paleontological resources, their treatment, and funding for mitigation as a part of federally authorized or funded projects. (e.g., Antiquities Act of 1906 [16 U.S. Code 431-433], Federal-Aid Highway Act of 1960 [23 U.S. Code

305]), and the Omnibus Public Land Management Act of 2009 [16 U.S. Code 470aaa]). Under California law, paleontological resources are protected by the California Environmental Quality Act.

Affected Environment

A *Paleontological Identification Report/Paleontological Evaluation Report* was prepared for the project in April 2010.

No fossil sites have been documented within the boundaries of the project area. Elsewhere in the San Joaquin Valley, deposits of similar age and lithology (rocks) to those found within the project area have been known to contain important Pleistocene-age fossils. The Arvin Landfill, about 15 miles southeast of Bakersfield, is mapped as Pleistocene "older alluvium" and Holocene to Late Pleistocene basin deposits. Additional fossil sites, though far from the project area, are from geologic units mapped as "older alluvium." A combined list of taxon from these localities include mammoth, camel, vole, wood rat, coyote, dog, fox, jackal, wolf, giant kangaroo rat, western pocket gopher, amphibian, lizard, and snake, horse, tree frog, hare, and rabbit.

Environmental Consequences

No fossils have been reported within the boundaries of the project site. However, the geologic units present at the surface and near-surface may contain important fossil remains. Documented vertebrate content from similar units in the San Joaquin Valley area indicate that these units should be considered highly sensitive for paleontological resources and are classified here, following Caltrans standards, as "High Potential" rock units that (based on previous studies) contain or are likely to contain significant vertebrate, significant invertebrate, or significant plant fossils.

Avoidance, Minimization, and/or Mitigation Measures

Mitigation measures specific to the project would be determined as part of the Paleontological Mitigation Plan prepared for the project; the following typical measures would be included:

- A nonstandard special provision for paleontology mitigation would be included in the construction contract special provisions section to advise the construction contractor of the requirement to cooperate with the paleontological salvage.
- A qualified principal paleontologist (California-licensed professional geologist with a master's or doctoral degree in paleontology or geology familiar with paleontological procedures and techniques) would be retained to prepare a detailed Paleontological

Mitigation Plan before the start of construction. All geologic work would be performed under the supervision of a California professional geologist.

- The qualified principal paleontologist would be present at pre-grading meetings to consult with grading and excavation contractors.
- Near the beginning of excavations, the principal paleontologist would conduct an employee environmental awareness training session for all persons involved in earth-moving for the project.
- A trained paleontological monitor, under the direction of the qualified principal paleontologist, would be onsite to inspect cuts into the paleontological sensitive deposits to inspect for fossils during grading involving sensitive geologic formations.
- If fossils are discovered during construction/excavation, the qualified principal paleontologist (or paleontological monitor) would recover the fossils in a timely and safe manner. The resident engineer would be notified immediately by the paleontologist/monitor of potential fossil finds in work areas. At the direction of the resident engineer, construction work in these areas would be stopped or diverted to allow recovery of fossil remains in a timely manner. The Paleontological Mitigation Plan must specify fossil recovery methods and additional reporting protocol to be followed if fossils are discovered.
- Bulk sediment samples would be recovered from fossiliferous horizons and processed for microvertebrate remains as determined necessary by the principal paleontologist. Details regarding the method for sampling must be developed as part of the Paleontological Mitigation Plan.
- Fossil remains collected during the monitoring and salvage portion of the mitigation program would be cleaned, repaired, sorted, and cataloged as appropriate for curation and storage at an appropriate scientific institution.
- A scientific institution, such as the University of California Museum for Paleontology, should be retained to curate and store fossilized remains found in the project site. Prepared fossils, along with copies of all pertinent field notes, photos, and maps, would then be deposited in a scientific institution with the paleontological collections.
- A final report that outlines the results of the mitigation program would be completed. The principal paleontologist and California-licensed professional geologist would sign the report. A copy of the final report would be provided to Caltrans.

2.2.4 Hazardous Waste or Materials

Regulatory Setting

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

The main federal laws regulating hazardous wastes/materials are the Resource Conservation and Recovery Act of 1976 and the Comprehensive Environmental Response, Compensation and Liability Act of 1980. The Resource Conservation and Recovery Act provides for "cradle to grave" regulation of hazardous wastes. The purpose of Comprehensive Environmental Response, Compensation and Liability Act, often referred to as Superfund, is to clean up contaminated sites so that public health and welfare are not compromised. Other federal laws include:

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

In addition to the acts listed above, Executive Order 12088, Federal Compliance with Pollution Control, mandates that necessary actions be taken to prevent and control environmental pollution when federal activities or federal facilities are involved.

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

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

Affected Environment

The information in this section is from the Supplemental Site Assessments Report (October 2011), Pesticide Assessment (October 2011), Aerially Deposited Lead Assessment (January 2010), Asbestos and Lead Paint Assessment (January 2010), Historic Oil Well Soil Contamination Assessment (November 2011), and Final Initial Site Assessment (January 2010).

The project area contains a mix of industrial, agricultural, commercial, and residential land uses. Portions of the project site are within areas of historic agricultural use and may contain accumulated pesticides. The Burlington Northern Santa Fe railroad existed in its current alignment as early as 1935; soils within the railroad right-of-way may be affected by historical railroad operations.

According to the Initial Site Assessment, 12 listed properties within about 570 feet of the project site have, or have had, the potential to release hazardous materials into the subsurface soil and/or groundwater. The Department of Conservation's Division of Oil, Gas, and Geothermal Resources was contacted to obtain and review information on oil, gas, and geothermal wells for properties along the project site. Two U.S. Geological Survey wells, six State Database (listed as ambient/municipal/intake) wells, and 39 state oil/gas wells are within a half-mile radius of the project site. Of these, eight oil/gas and two water wells appear to be within the project site.

A summary of potential hazardous material sources such as underground fuel storage tanks that were identified as within and/or next to the project site is provided in Table 2.8.

Table 2.8 Property Hazard Risk Summary

Property Name	Location/ Assessor Parcel Number	Recognized Environmental Concern
Undeveloped	116-010-372 116-010-398	Pesticides, Herbicides, Fertilizers, Oil production remains: Total petroleum hydrocarbons and volatile organic compounds
Tumblin Company (or SHEDs)	5585 Standard Street/ 116-010-232	Total petroleum hydrocarbons, metals
CSS Construction (or H&H Roofing)	4550 Buck Owens Boulevard/ 116-110-107	Metals
Kern Water Agency	3000 State Road 3200 Rio Mirada Drive/ 115-120-081	Underground storage tank
BC Laboratories	4100 Atlas Court/ 116-130-014 116-130-022	Metals, solvents
Kern Brothers Trucking	3912 Mercury/ 116-090-010	Oil/Water Separator
Rain for Rent	3404 State Road/ 116-070-04 116-070-05	Leaking underground storage tank Underground storage tank
Delaney & AHLF/ Detroit Diesel Services	3901 Mercury Avenue/ 116-102-160	Underground storage tanks, Oil/Water Separator
AllCorp Insurance	3331 State Road/ 116-110-010	Historical gas station
Jaco Oil Co	3101 State Road/ 116-110-04	Underground storage tank

The final initial site assessment recommended further action at five potential hazardous waste sites: Tumblin Company, CSS Construction, Kern Water Agency, and the two undeveloped parcels.

Additional assessments were performed to further evaluate the potential hazardous waste sites. The aerially deposited lead assessment included testing soil samples for lead along State Route 99 and Golden State Avenue in the project area. Four sample sites were selected and tested for asbestos, and three of the four were tested for lead-based paint.

A pesticide assessment was performed to evaluate portions of the project area in areas of historic agricultural fields and orchards for residues of persistent pesticides. Pesticide testing was limited to arsenic, lead and common organochlorine pesticides. Samples were obtained from eight locations spaced about 300 feet apart along the proposed roadway alignment

between the Beardsley Canal lateral and the Burlington Northern Santa Fe Railroad right-of-way.

The oil well soil contamination assessment included testing eight soil samples for Total Petroleum Hydrocarbons and Volatile Organic Compounds.

A supplemental site assessment report was prepared for three sites planned for partial or complete acquisition with known or potential recognized environmental conditions: Parcels 116-010-232 (Tumblin Company), 116-110-107 (CSS Construction), and Kern Water Agency. The report includes findings from site inspections, regulatory file reviews and owner/occupant interviews.

Environmental Consequences

Several pole-mounted transformers are within the project site; a few of these show signs of external rust or discoloration. Excavation and construction related to the project is not expected to affect the railroad right-of-way.

Subsurface investigations were performed at the two undeveloped parcels, but nothing was found. The Tumblin Company, Kern Water Agency and CCS Construction sites have no indications that past or present site operations have resulted in recognized environmental conditions. Further action or mitigation is not anticipated.

Very low concentrations of arsenic and no organochlorine pesticides were found. The maximum concentration of lead detected was 8.6 milligrams per kilogram, which is below the preliminary remediation goals screening value of 800 milligrams per kilogram for industrial land uses. A maximum concentration of 3.2 milligrams per kilogram for arsenic was detected and is below the interim guidance background level of equal to or less than 12 milligrams per kilogram.

The oil well study determined the range of total petroleum hydrocarbons as motor oil was relatively low (16 to 1,180 milligrams per kilogram, with an average value of 211 milligrams per kilogram). All samples resulted in non-detectable levels for volatile organic compounds, and total petroleum hydrocarbons as gasoline and diesel. The results appear consistent with conditions expected in a former oil field. Due to the area’s historic use, there is a potential for undiscovered hydrocarbon contamination elsewhere in this portion of the study area.

Results from the aerially deposited lead study indicated that total lead concentrations ranged from less than 1.0 to 2220 milligrams per kilogram. Soluble lead concentrations ranged from 0.9 to 67.0 milligrams per liter. Based on test results, soil excavated from the surface to about

1 foot below the surface would be classified as a California hazardous waste and would have to be disposed as such. Lead concentrations generally decreased with increasing depth. Therefore, the underlying soil (from 1 foot to 2.5 feet) where excavated and managed separately would not be considered a hazardous waste and could be reused onsite, relinquished to the contractor, or disposed of as a non-hazardous soil.

Four sites were selected and tested for asbestos-containing materials, and three of the four were sampled for lead-based paint. Asbestos was not detected and lead concentrations were below the regulatory threshold.

Yellow traffic-striping paint in the project area may contain heavy metals at concentrations in excess of the state regulatory thresholds.

Avoidance, Minimization, and/or Mitigation Measures

The following measures would be implemented:

- A subsurface site investigation would be conducted for polychlorinated biphenyls from pole-mounted transformers (should they be moved/relocated).
- Oil wells would need to be properly exposed for inspection and abandonment prior to construction according to Division of Oil, Gas and Geothermal Guidelines.
- Special provisions would be included in the construction contract to minimize worker and public exposure to a potential lead hazard. Also, a site-specific health and safety plan would be developed and used.
- Contaminated soils would require special handling and/or disposal at a Class I landfill.
- According to San Joaquin Valley Air Pollution Control District Regulation IV, Rule 4002, written notification to the air pollution control district is required 10 working days before any demolition activity (whether asbestos is present or not).

2.2.5 Air Quality

Regulatory Setting

The Federal Clean Air Act, as amended in 1990, is the federal law that governs air quality. The California Clean Air Act of 1988 is its companion state law. These laws and related regulations by the U.S. Environmental Protection Agency and California Air Resources Board set standards for the quantity of pollutants that can be in the air. At the federal level, these standards are called National Ambient Air Quality Standards. National and state ambient air quality standards have been established for six transportation-related criteria pollutants that have been linked to potential health concerns. The criteria pollutants are

carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), lead (Pb), sulfur dioxide (SO_2), and particulate matter—particulate matter is broken down for regulatory purposes into particles of 10 micrometers or smaller (PM_{10}) and particles of 2.5 micrometers and smaller ($PM_{2.5}$). In addition, state standards exist for visibility reducing particles, sulfates, hydrogen sulfide (H_2S), and vinyl chloride. The national and state standards are set at a level that protects public health with a margin of safety and are subject to periodic review and revision. Both state and federal regulatory schemes also cover toxic air contaminants (air toxics); some criteria pollutants are also air toxics or may include certain air toxics within their general definition.

Federal and state air quality standards and regulations provide the basic scheme for project-level air quality analysis under the National Environmental Policy Act and the California Environmental Quality Act. In addition to this type of environmental analysis, a parallel "conformity" requirement under the Federal Clean Air Act also applies.

Federal Clean Air Act Section 176(c) prohibits the U.S. Department of Transportation and other federal agencies from funding, authorizing, or approving plans, programs or projects that are not first found to conform to State Implementation Plan for achieving the goals of Clean Air Act requirements related to the National Ambient Air Quality Standards.

"Transportation Conformity" takes place on two levels: the regional or planning and programming level, and the project level. The proposed project must conform at both levels to be approved. Conformity requirements apply only in nonattainment and "maintenance" (former nonattainment) areas for the National Ambient Air Quality Standards, and only for the specific National Ambient Air Quality Standards that are or were violated. The U.S. Environmental Protection Agency regulations at 40 Code of Federal Regulations 93 govern the conformity process.

Regional conformity is concerned with how well the regional transportation system supports plans for attaining the standards set for carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM_{10} and $PM_{2.5}$), and in some areas sulfur dioxide (SO_2). California has attainment or maintenance areas for all of these transportation-related "criteria pollutants" except SO_2, and also has a nonattainment area for lead (Pb). However, lead is not currently required by the Federal Clean Air Act to be covered in the transportation conformity analysis.

Regional conformity is based on Regional Transportation Plans and Federal Transportation Improvement Programs that include all of the transportation projects planned for a region over a period of at least 20 years for the Regional Transportation Plan and 4 years (for the

Federal Transportation Improvement Program). Regional Transportation Plan and Federal Transportation Improvement Program conformity is based on use of travel demand and air quality models to determine whether or not the implementation of those projects would conform to emission budgets or other tests showing that requirements of the Clean Air Act and the State Implementation Plan are met. If the conformity analysis is successful, the Metropolitan Planning Organization, Federal Highway Administration, and Federal Transit Administration, make determinations that the Regional Transportation Plan and Federal Transportation Improvement Program are in conformity with the State Implementation Plan for achieving the goals of the Federal Clean Air Act. Otherwise, the projects in the Regional Transportation Plan and/or Federal Transportation Improvement Program must be 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 proposed project is deemed to meet regional conformity requirements for purposes of project-level analysis.

Conformity at the project-level also requires "hot spot" analysis if an area is "nonattainment" or "maintenance" for carbon monoxide (CO) and/or particulate matter (PM_{10} or $PM_{2.5}$). A region is "nonattainment" if one or more of the monitoring stations in the region measures violation of the relevant standard and the U.S. Environmental Protection Agency officially designates the area nonattainment. Areas that were previously designated as nonattainment areas but subsequently meet the standard may be officially redesignated to attainment by 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 (CO) or particulate matter analysis performed for National Environmental Policy Act purposes. Conformity includes some specific procedural and documentation standards for projects that require a hot spot analysis. In general, projects must not cause the hot spot-related standard to be violated and must not cause any increase in the number and severity of violations in nonattainment areas. If a known carbon monoxide or particulate matter violation is in the project vicinity, the project must include measures to reduce or eliminate the existing violation(s) as well.

Affected Environment

The information in this section is from the *Air Quality Study Report* (January 2010) prepared for the proposed project.

Regional Climate and Topography

The project site is in the Kern County portion of the San Joaquin Valley Air Basin. The air basin has an "inland Mediterranean" climate, averaging more than 260 sunny days per year.

During the summer, wind speed and direction usually originate at the north end of the San Joaquin Valley and flow south-southeast through the valley. During the winter, wind speed and direction occasionally originate from the south end of the San Joaquin Valley to flow north-northwest.

Summer temperatures average in the low 90s Fahrenheit in the northern valley and high 90s in the south. Winters are mild and humid, with average high temperatures in the 50s; the average daily low temperature is 45 degrees Fahrenheit. Average annual rainfall for the entire San Joaquin Valley is 9.25 inches on the valley floor. Low wind speeds, combined with low inversion layers in the winter, create a climate conducive to high carbon monoxide and particulate concentrations.

The project area is within the San Joaquin Valley Air Basin and Kern County and is therefore under the jurisdiction of both the San Joaquin Valley Air Pollution Control District and Kern Council of Governments. The San Joaquin Valley Air Pollution Control District has entered into a memorandum of understanding with the Kern Council of Governments to ensure a coordinated approach in the development and use of transportation plans throughout the San Joaquin Valley. This action helps the regional transportation planning agencies to comply with pertinent provisions of the federal and state Clean Air Acts.

Air Quality Standards

The State of California has designated the San Joaquin Valley Air Basin as being a nonattainment area for ozone (1-hour and 8-hour standard), and fine particulate matter 2.5 micrometers or less, and particulate matter larger than 2.5 micrometers but less than 10 micrometers. The federal Environmental Protection Agency has designated this area as being in nonattainment (serious) for ozone (8-hour standard) and fine particulate matter 2.5 micrometers or less, and a maintenance area for carbon monoxide (see Table 2.9).

Sensitive Receptors

Sensitive receptors for air quality include schools, medical centers and other healthcare facilities, childcare facilities, parks, and playgrounds.

Table 2.9 State and Federal Criteria Air Pollutant Standards, Effects, and Sources

Pollutant	Averaging Time	State Standard	State Attainment Status	Federal Standard	Federal Attainment Status	Principal Health and Atmospheric Effects	Typical Sources
Ozone (O_3)[a]	1 hour 8 hours	0.09 ppm 0.070 ppm	Nonattainment/ Severe Nonattainment	–[b] 0.075 ppm	– Nonattainment / Serious	High concentrations irritate lungs. Long-term exposure may cause lung tissue damage. Long-term exposure damages plant materials and reduces crop productivity. Precursor organic compounds include a number of known toxic air contaminants.	Low-altitude ozone is almost entirely formed from reactive organic gases and nitrogen oxides (NO_x) in the presence of sunlight and heat. Major sources include motor vehicles and other mobile sources, solvent evaporation, and industrial and other combustion processes. Biologically produced reactive organic gases may also contribute.
Carbon Monoxide (CO)	1 hour 8 hours	20 ppm 9.0 ppm[c]	Attainment	35 ppm 9 ppm –	Attainment/ Maintenance	Asphyxiant. CO interferes with the transfer of oxygen to the blood and deprives sensitive tissues of oxygen.	Combustion sources, especially gasoline-powered engines and motor vehicles. CO is the traditional signature pollutant for on-road mobile sources at the local and neighborhood scale.
Respirable Particulate Matter (PM_{10})[a]	24 hours Annual	50 µg/m^3 20 µg/m^3	Nonattainment	150 µg/m^3 –	Maintenance	Irritates eyes and respiratory tract. Decreases lung capacity. Associated with increased cancer and mortality. Contributes to haze and reduced visibility. Includes some toxic air contaminants. Many aerosol and solid compounds are part of PM_{10}.	Dust- and fume-producing industrial and agricultural operations; combustion smoke; atmospheric chemical reactions; construction and other dust-producing activities; unpaved road dust and re-entrained paved road dust; natural sources (wind-blown dust, ocean spray).
Fine Particulate Matter ($PM_{2.5}$)[a]	24 hours Annual	– 12 µg/m^3	Nonattainment	35 µg/m^3 15 µg/m^3	Nonattainment	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and produces surface soiling. Most diesel exhaust particulate matter – considered a toxic air contaminant – is in the PM2.5 size range. Many aerosol and solid compounds are part of PM2.5.	Combustion including motor vehicles, other mobile sources, and industrial activities; residential and agricultural burning; also formed through atmospheric chemical (including photochemical) reactions involving other pollutants including NO_x, sulfur oxides (SO_x), ammonia, and reactive organic gases.
Nitrogen Dioxide (NO_2)	1 hour Annual	0.18 ppm 0.03 ppm	Attainment	– 0.053 ppm	Attainment	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown. Contributes to acid rain.	Motor vehicles and other mobile sources; refineries; industrial operations.

Table 2.9 Continued

Pollutant	Averaging Time	State Standard	State Attainment Status	Federal Standard	Federal Attainment Status	Principal Health and Atmospheric Effects	Typical Sources
Sulfur Dioxide (SO_2)	1 hour 3 Hours 24 hours Annual	0.25 ppm -- 0.04 ppm –	Attainment	-- 0.5 ppm– 0.14 ppm 0.030 ppm	Attainment	Irritates respiratory tract; injures lung tissue. Can yellow plant leaves. Destructive to marble, iron, steel. Contributes to acid rain. Limits visibility.	Fuel combustion (especially coal and high-sulfur oil), chemical plants, sulfur recovery plants, metal processing.
Lead (Pb)[d]	Monthly Quarterly 3-month average	1.5 µg/m^3 – –	Attainment	– 1.5 µg/m^3 0.15 µg/m^3	Unclassified	Disturbs gastrointestinal system. Causes anemia, kidney disease, and neuromuscular and neurological dysfunction. Also considered a toxic air contaminant.	Primary: lead-based industrial process like batter production and smelters. Past: lead paint, leaded gasoline. Moderate to high levels of aerially deposited lead from gasoline may still be present in soils along major roads, and can be a problem if large amounts of soil are disturbed.
Hydrogen Sulfide (H_2S)	1 hour	0.03 ppm		–	Unclassified	Colorless, flammable, poisonous. Respiratory irritant. Neurological damage and premature death. Headache, nausea.	Industrial processes such as: refineries and oil fields, asphalt plants, livestock operations, sewage treatment plants, and mines. Some natural sources like volcanic areas and hot springs.
Visibility Reducing Particles (VRP)	8 hours	Visibility of 10 miles or more (Tahoe: 30 miles) at relative humidity less than 70%		–	Unclassified	Reduces visibility. Produces haze. Note: Not related to the Regional Haze program under the Federal Clean Air Act, which is oriented primarily toward visibility issues in National Parks and other Class I areas.	See particulate matter above.
Vinyl Chloride[3]	24 hours	0.01 ppm	Unclassified	–	Unclassified	Neurological effects, liver damage, cancer. Considered a toxic air contaminant.	Industrial processes

Source: California Air Resources Board Ambient Air Quality Standards chart, 02/16/2010. (http://www.arb.ca.gov/aqs/aaqs2.pdf)

Notes: ppm = parts per million; µg/m^3 = micrograms per cubic meter

[a] *Annual PM_{10} National Ambient Air Quality Standard revoked October 2006; was 50 µg/m^3. 24-hr. PM2.5 National Ambient Air Quality Standard tightened October 2006; was 65 µg/m^3.*

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

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

[d] The Air Resources Board has identified lead, 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 Air Resources Board and U.S. Environmental Protection Agency have identified various organic compounds that are precursors to ozone and $PM_{2.5}$ as toxic air contaminants. There is no threshold level of exposure for adverse health effect determined for toxic air contaminants, and control measures may apply at ambient concentrations below any criteria levels specified for these pollutants or the general categories of pollutants to which they belong.

Environmental Consequences

Regional Air Quality Conformity

The project is fully funded and is in the Kern Council of Governments 2011 Regional Transportation Plan, which was found to conform by Kern Council of Governments on July 15, 2010. The Federal Highway Administration and Federal Transit Administration adopted the air quality conformity finding on December 14, 2010. The project is also included on page 26 in the Kern Council of Governments' financially constrained 2011 Federal Transportation Improvement Program. The Kern Council of Governments' 2011 Federal Transportation Improvement Program was found to conform by the Federal Highway Administration and Federal Transit Administration on December 14, 2010. The design concept and scope of the project is consistent with the project description in the 2011 Regional Transportation Plan, the 2011 Federal Transportation Improvement Program, and the assumptions in the Kern Council of Governments' regional emissions analysis.

Project-Level Conformity

The project's operational emissions, which include the ozone precursor reactive organic gases and nitrogen oxides, meet the transportation conformity determination requirements imposed by the U.S. Environmental Protection Agency. Therefore, the project underwent a project-level rather than a regional-level air quality conformity analysis. A project-level analysis is required whenever a project is in an area designated as "nonattainment" or "maintenance" for any given criteria pollutant except for ozone. The project area is designated as "maintenance" for carbon monoxide and "nonattainment" for particulate matter $PM_{2.5}$.

Carbon Monoxide Analysis

A carbon monoxide hot spot is a localized concentration of carbon monoxide that is above state and/or federal 1-hour or 8-hour ambient air standards. Few carbon monoxide nonattainment areas exist nationwide, with none near the proposed project in the City of Bakersfield.

Because the project was included in the regional emissions analysis for a conforming Regional Transportation Plan and Federal Transportation Improvement Plan, the project is not subject to further regional conformity analyses. Rather, it is required to undergo an examination of local carbon monoxide impacts.

The Caltrans Carbon Monoxide Protocol outlines a tiered, multi-level process for analyzing local carbon monoxide impacts. Only those projects that are likely to worsen air quality need further analysis. Construction activities lasting 5 years or less are considered temporary

impacts under the U.S. Environmental Protection Agency transportation conformity rule and are exempt. A hot spot review was therefore limited to operational impacts.

Due to the project's redistribution of traffic—an increase in traffic volumes and a marginal reduction in travel speed—increased intersection delay at multiple intersections are expected in 2015 and 2035. Because multiple intersections would experience a degraded level of service, a conservative assumption is made that the project may result in higher carbon monoxide concentrations than those existing within the region at the time of attainment demonstration. However, the intersection worst-case predicted 1-hour and 8-hour carbon monoxide concentrations indicate the project would not have an adverse effect on 1-hour or 8-hour local carbon monoxide concentrations due to mobile source emissions. Because the project would not result in carbon monoxide concentrations that exceed the 1-hour or 8-hour ambient air quality standard, the basis of carbon monoxide protocol analysis methodology, no further analysis is needed.

In addition to federal guidelines for evaluating carbon monoxide hot spots using the Caltrans Carbon Monoxide Protocol, the San Joaquin Valley Air Pollution Control District has its own guidelines that largely mirror the federal guidance. Because elevated carbon monoxide concentrations are usually associated with roadways that are congested and carry heavy traffic volumes, the San Joaquin Valley Air Pollution Control District has established a screening threshold that can be used to determine with fair certainty whether motor vehicle traffic could cause a potential carbon monoxide hot spot.

Specifically, the San Joaquin Valley Air Pollution Control District has established that a violation of the carbon monoxide standard is likely if the following happens (San Joaquin Valley Air Pollution Control District 2002):

- A traffic study for the project indicates that the level of service on one or more streets or at one or more intersections in the project vicinity would be reduced to level of service E or F.
- A traffic study indicates that the project would substantially worsen an already existing level of service F on one or more streets or at one or more intersections in the project vicinity.

The traffic study prepared for the project (*Traffic Report for Hageman Road Extension to Golden State Avenue*, July 2009, and *Supplement*, January 2010) shows that levels of service at more study intersections under the Build Alternative would be acceptable (level of service C or better) in 2015 than the No-Build Alternative. In 2035, except for three intersections,

most study intersections would operate at acceptable levels of service under the Build Alternative; under the No-Build Alternative, six intersections would operate at unacceptable levels of service. Analysis of the two intersections where capacity would be changed as a result of the Build Alternative indicates acceptable levels of service in 2015 and 2035.

As a result, no further carbon monoxide analysis is required by the San Joaquin Valley Air Pollution Control District, and carbon monoxide levels are not expected to exceed federal or state standards, given the improvements in traffic congestion with build-out of the interchange improvements. Also, continuing decreases in carbon monoxide emissions from cleaner vehicle engines would further minimize any potential for carbon monoxide hot spots in the future.

Particulate Matter Analysis

To meet statutory requirements, the U.S. Environmental Protection Agency adopted regulations on March 10, 2006 that require $PM_{2.5}$ and PM_{10} hot spot analyses to be performed for projects of air quality concern. Federal guidance calls for qualitative hot spot analyses until appropriate methods and modeling guidance are available and $PM_{2.5}$ and PM_{10} hot spot analyses are required under the 40 Code of Federal Regulations 93.123(b)(4). In addition, through the final rule, the U.S. Environmental Protection Agency determined that projects not identified in 40 Code of Federal Regulations 93.123(b)(1) as projects of air quality concern have also met statutory requirements without any further hot spot analyses (40 Code of Federal Regulations 93.116[a]).

The project is not considered a project of air quality concern in that it would not significantly increase diesel vehicle activity or result in increases in congestion that would be paired with increased diesel vehicle activity. Further, there are no diesel truck yards or other facilities proposed with the project that would produce point sources of particulate matter emissions.

Intersection level of service would be B or C under the Build Alternative in opening year 2015 and horizon year 2035. While the Kern County portion of the air basin is classified as a federal nonattainment area for fine particulate matter 2.5 micrometers in diameter or less and a federal maintenance area for particulate matter larger than 2.5 micrometers but less than 10 micrometers, no specific locations or site categories have been identified for the project vicinity as a specific site of possible violation. There is no reason to believe that this project would create a new violation or worsen an existing violation of National Ambient Air Quality Standards for particulate matter.

On April 12, 2010, the U.S. Environmental Protection Agency and the Federal Highway Administration concurred that this was not a project of air quality concern. The proposed

project is consistent with regional transportation plans, is accounted for in both the Federal Transportation Improvement Plan and Regional Transportation Program, and is in conformity with the San Joaquin Valley Air Pollution Control District's 2007 PM_{10} Maintenance Plan.

Mobile Source Air Toxics

The Federal Highway Administration has issued interim guidance on how mobile source air toxics should be addressed in National Environmental Policy Act documents for highway projects, developing a tiered approach for analyzing mobile source air toxics. Depending on the specific project circumstances, the Federal Highway Administration has identified three levels of analysis:

- No analysis for exempt 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

Projected traffic volumes would be well below the 140,000 to 150,000 criterion established by Federal Highway Administration for projects considered to have a higher potential for mobile source air toxics effects. In addition, the project would result in a net decrease in annual average daily traffic volumes along the State Route 99 main line. The project is considered to have low potential for mobile source air toxics effects.

The amount of mobile source air toxics emitted in 2035 under the No-Build Alternative is estimated to be higher than that for the Build Alternative (see Table 3-5 in Appendix B of the project traffic report). However, emissions in 2035 would likely be lower under no-build and build conditions than present levels as a result of the U.S. Environmental Protection Agency's national control programs, projected to reduce mobile source air toxics emissions by 57 to 87 percent from 2000 to 2020. It is expected there will be reduced mobile source air toxics emissions in the immediate area of the project due to the reduced vehicle miles traveled associated with more direct routing and the U.S. Environmental Protection Agency's mobile source air toxics reduction programs.

Naturally Occurring Asbestos

Naturally occurring asbestos is present in about 44 of California's 58 counties. Asbestos is often found in serpentine rock and ultramafic rock near fault zones. There is no naturally occurring asbestos on or near the project site.

Avoidance, Minimization, and/or Mitigation Measures

No mitigation measures would be required.

Climate Change

Climate change is analyzed at the end of this chapter.

Neither the U.S. Environmental Protection Agency nor the Federal Highway Administration has set forth explicit guidance or methodology to conduct project-level greenhouse gas analysis. As stated on the Federal Highway Administration's climate change website (http//www.fhwa.dot.gov/hep/climate/index.htm), climate change considerations should be integrated throughout the transportation decision-making process—from planning through project development and delivery. Addressing climate change mitigation and adaptation up front in the planning process facilitates decision-making and improves efficiency at the program level, and will inform the analysis and stewardship needs of project-level decision-making. Climate change considerations can easily be integrated into many planning factors, such as supporting economic vitality and global efficiency, increasing safety and mobility, enhancing the environment, promoting energy conservation, and improving the quality of life.

Because there have been more requirements set forth in California legislation and executive orders regarding climate change, the issue is addressed in a separate California Environmental Quality Act discussion at the end of this chapter and may be used to inform the National Environmental Policy Act decision. The four strategies set forth by the Federal Highway Administration to lessen climate change impacts do correlate with efforts that the State has undertaken and is undertaking to deal with transportation and climate change; the strategies include improved transportation system efficiency, cleaner fuels, cleaner vehicles, and reduction in the growth of vehicle hours traveled.

2.3 Biological Environment

2.3.1 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 U.S., including wetlands. Waters of the U.S. include navigable waters, interstate waters, territorial seas and other waters that may be used in interstate or

foreign commerce. To classify wetlands for the purposes of the Clean Water Act, a three-parameter approach is used that includes the presence of: hydrophytic (water-loving) vegetation, wetland hydrology, and hydric soils (soils formed during saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the Clean Water Act.

Section 404 of the Clean Water Act establishes a regulatory program that provides that discharge of dredged or fill material cannot be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. The Section 404 permit program is run by the U.S. Army 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 effect. Nationwide permits are issued to authorize a variety of minor project activities with no more than minimal effects.

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 Corps' decision to approve is based on compliance with the U.S. Environmental Protection Agency's Section 404(b)(1) Guidelines (40 Code of Federal Regulations Part 230), and whether permit approval is in the public interest. The Section 404 (b)(1) Guidelines were developed by the U.S. Environmental Protection Agency in conjunction with the U.S. Army Corps of Engineers, and allow the discharge of dredged or fill material into the aquatic system (waters of the U.S.) only if there is no practicable alternative which would have less adverse effects. The guidelines state that the U.S. Army Corps of Engineers may not issue a permit if there is a least environmentally damaging practicable alternative to the proposed discharge that would have lesser effects on waters of the U.S., and not have any other significant adverse environmental consequences.

The Executive Order for the Protection of Wetlands (Executive Order 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, this order states that a federal agency, such as the Federal Highway Administration and/or Caltrans, as assigned, cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds: 1) that there is no practicable alternative to the construction and 2) the 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 Boards. In certain circumstances, the Coastal Commission (or Bay Conservation and Development Commission or Tahoe Regional Planning Agency) may also be involved.

Sections 1600-1607 of the California Fish and Game Code require any agency that proposes a project that will substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify the California Department of Fish and 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.

The Regional Water Quality Control Boards were established under the Porter-Cologne Water Quality Control Act to oversee water quality. The Regional Water Quality Control Board also issues water quality certifications for impacts to wetlands and waters in compliance with Section 401 of the Clean Water Act. See the Water Quality section for more details.

Affected Environment

The following information is based on the Natural Environment Study completed for the project in September 2013.

There are no wetlands within the project limits. There is an irrigation canal within the limits: the Beardsley Canal Lateral that potentially could be waters of the United States. Because it is an irrigation canal, it is unlikely it would be subject to U.S. Army Corps of Engineers jurisdiction.

Environmental Consequences

Hageman Road would be extended across the Beardsley Canal Lateral either by constructing a bridge or a double-box culvert. Approximately 0.15 acre of potential waters of the United States and 0.74 acre of area subject to California Department of Fish and Wildlife and Regional Water Quality Control Board jurisdiction would be affected.

Avoidance, Minimization, and/or Mitigation Measures

The following measure would be implemented: Caltrans would obtain the appropriate permits for work at the Beardsley Canal Lateral and implement the permit provisions during construction

2.3.2 Threatened and Endangered Species

Regulatory Setting

The main federal law protecting threatened and endangered species is the Federal Endangered Species Act, 16 U.S. Code Section 1531, et seq. (see also 50 Code of Federal Regulations Part 402). This act and subsequent amendments provide for the conservation of endangered and threatened species and the ecosystems upon which they depend. Under Section 7 of this act, federal agencies such as the Federal Highway Administration are required to consult with the U.S. Fish and Wildlife Service and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service to ensure federal agencies are not undertaking, funding, permitting or authorizing actions likely to jeopardize the continued existence of listed species or destroy or adversely modify designated critical habitat. Critical habitat is defined as geographic locations critical to the existence of a threatened or endangered species. The outcome of consultation under Section 7 is a Biological Opinion. 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: 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 using 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 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 California Fish and Game Code.

Another federal law, the Magnuson-Stevens Fishery Conservation and Management Act of 1976, was established to conserve and manage fishery resources found off the coast as well as anadromous species (swimming up rivers from the sea) and Continental Shelf fishery resources of the United States, by exercising (A) sovereign rights for the purposes of exploring, exploiting, conserving, and managing all fish within the exclusive economic zone established by Presidential Proclamation 5030 (March 10, 1983) and (B) exclusive fishery management authority beyond the exclusive economic zone over such anadromous species, Continental Shelf fishery resources, and fishery resources in special areas.

Affected Environment

Information in this section is from the *Natural Environment Study* and the *Biological Assessment* (September 2013) prepared for the project.

Four special-status plant species were determined to potentially occur within the biological study area: Bakersfield smallscale; San Joaquin woolythreads; Bakersfield cactus, and California jewel-flower. The habitat evaluation for all four species determined no suitable habitat for these species was present in the project area.

Only one listed animal species, the San Joaquin kit fox, was determined to potentially use the project area for denning (living in a burrow) and foraging. The San Joaquin Valley Railroad, Beardsley Canal lateral, Calloway Canal, and Kern River corridor may be important for kit fox daily movement. Portions of the biological study area are within known kit fox concentration areas.

Results of focused surveys in 2008 found five presumed active San Joaquin kit fox dens, seven potential dens, and six incidences of kit fox sign (tracks, scat, and prey remains). Two of the presumed active dens were along Golden State Avenue (State Route 204); two were at the Airport Drive interchange; and one was along the Beardsley Canal lateral. Two potential dens were identified in the banks of the San Joaquin Valley Railroad; three were identified among the presumed active dens in the banks of Golden State Avenue (State Route 204); and two were identified in the flat, low-density industrial land east of State Route 99. Kit fox sign was found scattered throughout the low-density industrial land, along the Beardsley Canal lateral, warehouse perimeter, and in a vacant lot west of Knudsen Drive and Hageman Road.

Environmental Consequences

There would be no impacts to listed plants.

The project would permanently affect 20.7 acres and temporarily affect 4.7 acres of potential kit fox habitat. Connectivity of kit fox habitat would be reduced and habitat fragmentation increased. Reduced connectivity may force kit fox to move through areas that present greater risk such as increased potential for predation (killed by other animals) and collisions with vehicles. Up to three potential and three presumed active kit fox dens may be removed. Loss of dens would result in the displacement of foxes and alter space use patterns.

Temporary effects to the kit fox include short-term disturbance to habitat that would result from project construction activities. Disturbance to the kit fox may also occur from noise and light pollution during nighttime construction.

Avoidance, Minimization, and/or Mitigation Measures

The following measures would minimize and compensate for impacts to the San Joaquin kit fox and any previously unidentified protected species:

- Road undercrossing structures are proposed for installation, widening, or maintenance as part of the initial project design to minimize impacts to the kit fox. These structures would be reevaluated and adjusted accordingly during the final design phase for the project. To facilitate movement by kit foxes, a 5-foot-high by 5-foot-wide reinforced concrete box is proposed for the dual purpose of drainage and kit fox use east of the Beardsley Canal Lateral. Fencing or other features that may otherwise obstruct kit fox access to the entrances of the reinforced concrete box must not be installed. A hinged gate with 6-inch by 6-inch grating must be considered, and, if feasible, built over each entrance of the reinforced concrete box to prevent predators from entering. Kit fox escape pipes are not currently recommended for installation in a dual water and kit fox culvert because of safety concerns for kit foxes during culvert cleaning or in the event of flooding.
- The project would retain an existing 10-foot-high by 10-foot-wide reinforced concrete box culvert for vehicle traffic about 200 feet northwest of the Calloway Canal. Fencing or retaining walls would prevent obstruction of the reinforced concrete box.
- The project would keep existing kit fox movement opportunities along the San Joaquin Valley Railroad by designing the toe-of-road fill, walls, fencing, and any other permanent physical obstruction no less than 20 feet from the San Joaquin Valley Railroad centerline.
- The project would install permeable fencing where feasible along the proposed right-of-way. The following three options are proposed as modifications to right-of-way road fencing that may be permeable to kit fox movement: elevate the bottom of the fence 5

inches to allow unobstructed movement by kit foxes under the fence; provide ground-level 8-inch-high by 8-inch-wide gaps no more than 100 feet apart for the length of the fence; or install fencing with a minimum mesh size of 3.5 inches by 7 inches or, preferably, 4 inches by 12 inches to allow unlimited movement by kit foxes.

- Use permeable median barriers on roads at grade such as Caltrans-designed modified median barrier type 60/S. Caltrans type 60/S design has been approved by the U.S. Fish and Wildlife Service and includes 9-inch-high by 18-inch-wide half-circle openings spaced every 150 feet to allow kit fox passage. The total proposed median barrier width is 12 feet, with a 2-foot-wide barrier and 5-foot-wide inside shoulder in each direction.
- A minimum 36-inch-diameter reinforced concrete box would be installed at Station 49+00. The culvert must extend beyond the retaining walls so kit foxes may pass under the road. The culvert must be at ground level with no down-slope.
- Drainage ditches would be no greater than 1:1 ratio and no deeper than 2.5 feet.
- Warning signs at the Knudsen Drive and Hageman Road intersection and known kit fox movement corridors would be installed.
- Median and roadside landscaping would be planted in one of three alternative strategies: select plants that would be no higher than 6 inches at maturity; maintain vegetation height at 6 inches; or create gaps no less than 4 feet wide every 12 feet in areas landscaped with trees and shrubs. Median barriers higher than 10 inches would not receive plants.
- Kit fox use of culverts and reinforced concrete boxes would be monitored at three-month intervals for three years following construction.
- Culverts and reinforced concrete boxes would be monitored to verify kit fox access is not blocked by debris.
- A biologist approved by the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife would do a survey for kit fox dens prior to ground-disturbing activities. The surveys would be done no more than 60 days and no less than 14 days prior to ground disturbance. If dens or potential dens are detected within the project footprint, resource agency permission would be sought to monitor and excavate dens that would be affected by the project. Buffer dens (dens within 200 feet of the project impact area) near construction areas would also be monitored. Active dens would not be excavated during the natal (birthing) season (January 1–June 14).
- The project would use standardized construction and operational requirements as described in the U.S. Fish and Wildlife Service Standardized Recommendations for

Protection of the San Joaquin Kit Fox Prior to and during Ground Disturbance (U.S. Fish and Wildlife Service 2011).

- Construction activities would not be done at night (to the extent feasible); if work must be done at night for activities that involve maintenance, road closure and/or for safety reasons, noise and lighting must be directed away from wildlife corridors. All nighttime work adjacent to potential kit fox movement areas would be coordinated with the City of Bakersfield and a qualified biologist. Equipment maintenance, lighting, and staging would occur in designated areas outside environmentally sensitive areas, directed away from potential kit fox movement areas, and limited in duration.
- The Sacramento U.S. Fish and Wildlife Service office and California Department of Fish and Wildlife must be notified of any accidental death or injury to a San Joaquin kit fox.
- A biologist approved by the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife must do environmental awareness training for all construction crew members before ground-disturbing activities. The biologist would monitor ground-disturbing activities once daily.
- Permanent and temporary loss of kit fox habitat would be mitigated through the Metropolitan Bakersfield Habitat Conservation Plan at ratios developed during the Section 7 endangered species consultation. The Metropolitan Bakersfield Habitat Conservation Plan Trust Group provided a letter on December 3, 2010 in which the group approved the ongoing use of the Habitat Conservation Plan for proposed compensation obligations for this and the remaining five Thomas Roads Improvement Program projects; the Metropolitan Bakersfield Habitat Conservation Plan Trust Group also permitted payment to occur after the approval of the final environmental document for each project. The permanent loss and the temporary disturbance of habitat suitable for the kit fox would be compensated for using a 3:1 compensation ratio for permanent effects and 1.1:1 compensation ratio for temporary effects through the Habitat Conservation Plan. The appropriate fee amount would be paid to the Habitat Conservation Plan Trust Group. The trust group would purchase the required acreage to be protected in perpetuity.
- If any previously unidentified protected species that is not addressed in the Natural Environment Study is found to be present, the species would be avoided and evaluated by a qualified biologist. The U.S. Fish and Wildlife Service and California Department of Fish and Wildlife would be notified of any previously unreported protected species. Any take of protected wildlife must be reported immediately to the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife.

- Caltrans is proposing to use a Kit Fox Urban Benefit Program to compensate for cumulative impacts to the six Thomas Roads Improvements Program projects. The program was described in the City of Bakersfield and State of California (2010) report, but is currently being revised with input from the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife. The conceptual framework for this and the sump habitat program is described in the *Draft Thomas Roads Improvement Program Mitigation for Cumulative Effects to San Joaquin Kit Fox,* and the draft *TRIP San Joaquin Kit Fox Effects Analysis, Mitigation Strategy, and Implementation Plan* (City of Bakersfield and Caltrans 2010).
- The final approved version of the Kit Fox Urban Benefit Program would be used within one year of the approval of the final environmental document for the last of the six Thomas Roads Improvement Program projects. Long-term conservation assurances would also be provided for all sumps (basins) included in the Sump Habitat Program. These assurances would include the following: 1) a recorded covenant for each sump; 2) a perpetual endowment to pay for management, maintenance, and monitoring costs associated with ongoing implementation of the Kit Fox Urban Benefit Program; and 3) a long-term preservation management plan.

2.3.3 Invasive Species

Regulatory Setting

On February 3, 1999, President Bill Clinton signed Executive Order 13112 requiring federal agencies to combat the introduction or spread of invasive species in the United States. The order defines invasive species as “any species, including its seeds, eggs, spores, or other biological material capable of propagating that species, that is not native to that ecosystem whose introduction does or is likely to cause economic or environmental harm or harm to human health.” Federal Highway Administration guidance issued August 10, 1999 directs the use of the state’s invasive species list currently maintained by the California Invasive Species Council to define the invasive species that must be considered as part of the National Environmental Policy Act analysis for a proposed project.

Affected Environment

Several invasive species of plants occur in the biological study area. Those invasive species include red brome, wild oats, foxtail barley, mustard, and Russian thistle.

Environmental Consequences

The project is expected to disturb the ground and remove both nonnative vegetation and native vegetation, directly affecting about 11.39 acres of open land. During construction,

there is potential for invasive species to be tracked into the site from construction vehicles and spread into open graded areas.

Avoidance, Minimization, and/or Mitigation Measures

- Construction equipment would be cleaned of mud or other debris before mobilizing to the project site and before leaving the site during the course of construction.
- Trucks with loads carrying vegetation would be covered, and vegetation materials removed from the site would be disposed of in accordance with applicable laws and regulations.
- Post-construction, any disturbed areas remaining as bare ground would be hydro-seeded with a Caltrans-approved seed mix.
- The use of invasive and nonnative plant species identified by the California Invasive Plant Council would be avoided. Landscape plans would be reviewed and verified by a qualified botanist to ensure that invasive species are not used.

2.4 Construction Impacts

Air Quality

Affected Environment

See Section 2.2.5 for a detailed discussion of the affected environment.

Environmental Consequences

During construction, the project would generate air pollutants. Exhaust from construction equipment contains hydrocarbons, oxides of nitrogen, carbon monoxide, suspended particulate matter, and odors. However, most pollutants would be windblown dust generated during excavation, grading, hauling, and various other activities. Fugitive dust emissions would vary as a function of such parameters as soil silt content, soil moisture, wind speed, and acreage of disturbance. The impacts of these activities would vary each day as construction progresses. Dust and odors at some residences very close to the right-of-way could cause occasional annoyance and complaints.

Construction-generated emissions are short-term and temporary. Lasting as long as construction activities are going on, the emissions would have potential for substantial air quality impacts. Construction of the project would result in temporary generation of emissions resulting from site grading and excavation, road paving, motor vehicle exhaust associated with construction equipment and worker trips, and movement of construction equipment, especially on unpaved surfaces.

Avoidance, Minimization and/or Mitigation Measures

The following measures, which are standard practice on all Caltrans projects, would minimize temporary air quality impacts from construction activities:

- Implement California Department of Transportation 2010 Standard Specifications.
- Prepare and use a Dust Control Plan in compliance with San Joaquin Valley Air Pollution Control District Regulation VIII requirements.
- Submit an air impact assessment application as required by Air Pollution Control District Rule 9510, Indirect Source Review.
- Use measures to reduce construction-related exhaust emissions.

Noise

Affected Environment

The project is in a mostly commercial/industrial or vacant area. Two residential neighborhoods sit nearby. A noise study completed in February 2010 determined there would be no long-term adverse noise impacts on sensitive receptors. There would, however, be noise during construction.

Environmental Consequences

Noise from construction activities may intermittently dominate the noise environment in the immediate area. Table 2.10 shows noise levels produced by equipment commonly used for roadway construction.

Table 2.10 Construction Equipment Noise

Equipment	Maximum Noise Level (A-weighted decibels at 50 feet)
Scraper	89
Bulldozer	85
Heavy Truck	88
Backhoe	80
Pneumatic Tool	85
Concrete Pump	82
Pile Driver (Impact Type)	101
Scraper	89

Equipment is expected to generate maximum noise levels ranging from 80 to 101 decibels at a distance of 50 feet; noise levels would be reduced over distance at a rate of about 6 decibels per doubling of distance. Support machinery associated with pile driving activity would produce the lower noise levels that correspond to the regular construction activity. Any

groundborne noise or vibration would be limited to the construction period and would be short in duration (less than two years).

Avoidance, Minimization, and/or Noise Abatement

The following measures would minimize temporary noise impacts from construction activities:

- Sound control must conform to the provisions in Section 14-8.02, "Noise Control," of the Caltrans Draft 2010 Standard Specifications and Special Provisions. The specification states:
    - Do not exceed 86 A-weighted decibels at 50 feet from the job site activities from 9:00 p.m. to 6:00 a.m. Equip an internal combustion engine with the manufacturer-recommended muffler. Do not operate an internal combustion engine on the job site without the appropriate muffler.
    - This requirement in no way relieves the contractor of responsibility for complying with local ordinances regulating noise level.

Animal Species

Affected Environment

Surveys for sensitive animal species were done in the project area. The San Joaquin kit fox was found to be present. The potential exists for burrowing owls to be present also. Impacts to the San Joaquin kit fox are discussed in the Threatened and Endangered Species section earlier in the document.

Environmental Consequences

Burrowing owls were not observed during surveys even though suitable habitat is in the project area. Burrowing owls could move into the area before construction.

Avoidance, Minimization, and/or Mitigation Measures

The following measures would minimize impacts to burrowing owls and native birds:

- Pre-disturbance/preconstruction burrowing owl surveys would be done no more than 30 days prior to the start of construction activities. Occupied burrows would not be disturbed during the nesting season (February 1 through August 31) unless (1) the birds have not begun egg-laying and incubation or (2) juveniles from the occupied burrows are foraging independently and are capable of independent survival. If burrowing owls are observed using burrows, refer to measures below for the next steps.

- Depending on the location of the burrowing owls, if found, full avoidance would occur where feasible. If not feasible, use the measures below.
- If burrowing owls are identified during pre-disturbance/preconstruction surveys, passive relocation by an ornithologist would be done if it is confirmed the burrowing owls are not nesting. In such cases, exclusion devices would not be placed until the young have fledged and found to be no longer dependent on the burrow. Exclusion devices would be used until all owls have left the site. If burrowing owls are found to be nesting, use the next measure.
- If burrowing owls are found to be nesting, then construction disturbance cannot occur within 300 feet of the active burrow(s).
- A minimum of 6.5 acres of foraging habitat per pair or unpaired resident burrowing owls should be acquired and permanently protected if burrowing owls are found during the pre-disturbance/preconstruction survey phase.
- Construction personnel would be trained by a qualified biologist prior to grading.
- If site grading starts during native bird species nesting/breeding season (February through September), pre-disturbance surveys would be done prior to issuance of grading permits for each phase of the project and within 30 days of ground disturbance. If ground disturbance activities are delayed, then additional pre-disturbance surveys would be done so that no more than one week would elapse between the last survey and the start of activities.
- If active nests are found, clearing and construction within 300 feet of the nest (500 feet for raptors)—or at a distance deemed sufficient by the qualified biologist—must be postponed or halted until the nest is vacated, juveniles have fledged, and there is no evidence of a subsequent attempt at nesting.
- To avoid attracting dogs, cats, and other predators of the species of concern, the project site would be kept as clean of debris as possible. All food-related trash items would be enclosed in sealed containers and regularly removed from the site.

2.5 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.

Affected Environment

This cumulative impact analysis considered projects currently proposed, approved, or under construction within Kern County and the City of Bakersfield. The resource study areas for cumulative impacts and conditions for each of the resources considered are described in Sections 2.1.1 through 2.3.4.

The proposed project would have no effect on agricultural resources, community character and cohesion, wild and scenic rivers, cultural resources, population and housing, parks and recreation, and mineral resources. The project, when combined with other projects, would not result in substantial cumulative effects under the National Environmental Policy Act or significant cumulative impacts under the California Environmental Quality Act. Cumulative impacts specific to each resource are discussed below.

Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures

Human Environment

Community Impacts

Most of the planned projects considered, if approved, would be built following construction of the project. Construction of the State Route 99 and Olive Drive interchange improvements

and the State Route 99 Widening project could occur at the same time as the proposed project; however, as indicated in the Initial Study prepared for the State Route 99 Widening project, the State Route 99 Widening project would have no effect on community impacts, and would therefore not present conditions that would establish cumulative impact potential.

Any relocations and/or acquisitions proposed as part of the other planned projects are expected to be minimal due to the planned improvements to existing uninhabited roadway facilities and undeveloped areas (Saco Ranch). The proposed project is not expected to contribute to a cumulatively considerable impact.

The project does not occur within an area characterized by a substantial proportion of minority or low-income populations and would not result in disproportionately high and adverse effects to these groups; therefore, the proposed project would not create or contribute to cumulative environmental justice impacts.

Visual/Aesthetics

The area of effect for cumulative visual resources extends a quarter-mile east of State Route 99/Golden State Avenue to the Union Pacific Railroad alignment and parallel to State Route 99/Golden State Avenue in a northwest-to-southeast direction. West, the area of effect extends three-quarters of a mile from the project corridor parallel to State Route 99/Golden State Avenue in a northwest-to-southeast direction. Olive Drive forms the northern boundary of the visual area of effect; the southerly bank of the Kern River forms the southern boundary. No other projects, except for the State Route 99 Widening project, have been identified within that visual area of effect that would contribute to cumulative visual impacts.

The State Route 99 Widening project includes measures to avoid substantial impacts affecting visual resources and would not be expected to result in a cumulatively considerable impact when considered with the mitigated impacts of the proposed project.

If other, not yet known, future road or large building development projects are proposed within the area of visual effect, it is expected that each of the projects would individually include an analysis of visual impacts and would incorporate avoidance, minimization, and/or mitigation measures as needed.

Because the project would include lighting components, it would increase nighttime lighting levels; however, the project is not anticipated to introduce adverse levels of nighttime lighting into the view. The introduction of new lighting is not expected to be cumulatively considerable. Adverse lighting effects at the “flyover” near sensitive viewers (State Road

residents residing north of Airport Drive) would be avoided by directing lighting away from sensitive receptors.

Physical Environment

Water Quality and Storm Water Runoff

A measurable increase in the amount of waterborne pollutants is not anticipated with incorporation of the identified minimization measures into the project. It is assumed that other projects proposed in the vicinity would require a National Pollutant Discharge Elimination System permit and would comply with the provisions of the permit, reducing the potential for cumulative water quality impacts.

Paleontology

The project site is identified as having a high potential to adversely affect important nonrenewable paleontological resources. Other highway projects planned throughout the Central Valley would require excavation in Pleistocene-age sediments similar to those found in the project area. While individually many of the other construction projects involve smaller amounts of excavation that would result in a lower impact intensity, the total extent of all excavation for these projects could result in the loss of a large number of important fossils. The project's contribution to the cumulative loss of paleontological resources would be reduced through salvage of fossil specimens during the construction of these projects.

Hazardous Waste or Materials

The project, in conjunction with other projects, could potentially expose the public to asbestos-containing materials, aerially deposited lead, creosote, fuels, herbicides and metals such as lead and chromium during construction activities if these materials are present. If construction of several projects were to occur simultaneously in the same vicinity, there could be potential for additional exposure. However, adherence to project-specific requirements and measures identified in Section 2.2.4 would limit the potential for cumulative impacts.

Biological Environment

Threatened and Endangered Species

The removal of lands from the overall land balance available for listed, protected, and special wildlife constitutes a cumulative impact to biological resources. Avoidance and minimization measures would reduce impacts as would compensatory mitigation in compliance with the provisions of the Habitat Conservation Plan. The six Thomas Roads Improvements Program projects would have potential cumulative impacts on the San Joaquin kit fox. The implementation of the Thomas Roads Improvement Program projects is expected to result in

the incremental loss and fragmentation of kit fox habitat, which is already highly fragmented in Bakersfield.

The avoidance, minimization, and mitigation measures noted in Chapter 2 of this Initial Study/Environmental Assessment and the following mitigation measures would ensure that the project does not result in cumulative impacts to the San Joaquin kit fox:

- The Sump Habitat Program, as outlined in the San Joaquin Kit Fox Effects Analysis Mitigation Strategy, and Implementation Plan would provide long-term habitat conservation for the urban San Joaquin kit fox population in the metropolitan Bakersfield area by focusing on sumps, or storm-water drainage basins, as known and functional habitat for the species. The city, in coordination with Caltrans, proposes to use the Sump Habitat Program to compensate for cumulative effects to the San Joaquin kit fox affected by this and five future Thomas Roads Improvement Program projects.
- Conservation goals of this program include measures addressing the installation of artificial dens in selected sumps; enhancement of San Joaquin kit fox habitat by controlling vegetation in and around dens; increase in San Joaquin kit fox accessibility to sumps through fence and gate openings with proposed dimensions of 6 inches by 6 inches to exclude predators like coyotes and medium- to large-sized dogs; and reduction in the potential for impacts to the San Joaquin kit fox associated with regular maintenance activities and predator access.
- The City of Bakersfield, on August 10, 2010, provided a letter of commitment to the U.S. Fish and Wildlife Service fully supporting and providing assurance of the implementation and management of the Sump Habitat Program and its conservation efforts.

The following is the current conceptual framework for the Sump Habitat Program:

- Selection of sumps that maintain San Joaquin kit fox accessibility and/or habitat with high to medium conservation priority based on the relative potential for minimizing both project-level and program-level effects.
- Installation and maintenance of San Joaquin kit fox enhancement features: fences/gate gaps, artificial dens, conservation zones, signs, and enhancement maintenance and repair.
- Management of sump vegetation compatible with San Joaquin kit fox presence and/or use: performance of routine maintenance outside the San Joaquin kit fox natal season and the use of hand tools in conservation zones and new active dens.

- Biological monitoring and reporting of results: pre-maintenance surveys; den monitoring and supervised den excavation; environmental awareness training; maintenance monitoring; annual enhancement inspection; annual San Joaquin kit fox sump use monitoring; and annual reporting; provisions for long-term conservation assurances such as individual conservation easements for each sump; a perpetual non-wasting endowment for management, maintenance, and monitoring costs associated with ongoing implementation; and an agency-approved long-term management plan. The proposed easement and endowment holders must be U.S. Fish and Wildlife-approved third-party organizations.

In addition, the following design modifications are proposed for Thomas Roads Improvement Program projects to avoid and minimize impacts to the kit fox:

- Where feasible, design projects without fencing or use only kit-fox permeable fencing. The following are three options for fencing modifications:
    - Elevate the bottom of the fence 5 inches to allow unobstructed movement by kit foxes under the fence.
    - Install ground-level 8-inch by 8-inch wide gaps no more than 100 feet apart for the length of the fence.
    - Install fencing with a minimum mesh size of 3.5 inches by 7 inches (5 inches by 12 inches is preferable).
- Where curbed medians are required on roadways, they are to be no greater than 6 inches high with landscape vegetation kept low.
- When median barriers greater than 10 inches tall are required on at-grade roadways accessible to the kit fox, the Caltrans Type 60/S median barrier, recently modified to allow passage by kit foxes, is recommended (U.S. Fish and Wildlife Service Biological Opinion 81420-2009-F-0752; 2009).
- Where feasible and appropriate, current drainage culverts and reinforced concrete boxes are to be retained and/or widened.
- Where feasible, undercrossing structures must include escape pipes made of 10-inch-diameter corrugated metal pipe no less than 10 feet long with the ends of each pipe narrowing to 4 to 6 inches. A hinged, iron gate with 6-inch by 6-inch grating can be placed over each entrance of the crossing structure. Entrances must be at ground level.
- Where curbed median and roadside landscaping are proposed, the following landscaping alternatives should be used:

  - Select plants that do not exceed 6 inches in height at maturity.
  - Maintain vegetation height so that it does not exceed 6 inches.
  - Create gaps no less than 4 feet wide every 12 feet in areas landscaped with trees and shrubs.
- Minimize impacts on kit fox habitat consistent with design criteria and requirements for the facility. For example, minimize project footprint and, where feasible, limit staging and access to areas with low value as kit fox habitat.

Invasive Species

Measures are proposed to avoid a cumulatively considerable contribution to the introduction and/or establishment of invasive species.

2.6 Climate Change

Climate change refers to long-term changes in temperature, precipitation, wind patterns, and other elements of the earth's climate system. An ever-increasing body of scientific research attributes these climatological changes to greenhouse gases, particularly those generated from the production and use of fossil fuels.

While climate change has been a concern for several decades, the establishment of the Intergovernmental Panel on Climate Change (IPCC) 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 (CO_2), 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 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" and "Adaptation." "Greenhouse Gas Mitigation" is a term for reducing greenhouse gas emissions in order to reduce or "mitigate" the impacts of climate change. "Adaptation" refers to the effort of planning for and adapting to impacts due to climate

change (such as adjusting transportation design standards to withstand more intense storms and higher sea levels).

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

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.

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

Assembly Bill 32 (AB 32), Nunez and Pavley, the Global Warming Solutions Act of 2006: AB 32 sets the same overall greenhouse gas emissions reduction goals as outlined in Executive Order S-3-05, while further mandating that the California Air Resources Board create a 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 (SB 97) Chapter 185, 2007), Greenhouse Gas Emissions: This bill required the Governor's Office of Planning and Research to develop recommended amendments to the

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 (MPO) for each region must then develop a "Sustainable Communities Strategy" (SCS) that integrates transportation, land-use, and housing policies to plan for the achievement of the emissions target for its region.

Senate Bill 391 (SB 391), Chapter 585, 2009, California Transportation Plan: This bill requires the state's long-range transportation plan to meet California climate change goals under AB 32.

Federal

Although climate change and greenhouse gas reduction is a concern at the federal level, currently there are no regulations or legislation that have 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 set forth explicit guidance or methodology to conduct project-level greenhouse gas analysis. The 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 quality of life.

The four strategies outlined by the Federal Highway Administration to lessen climate change impacts correlate with efforts the state has and is undertaking to deal with transportation and climate change; the strategies include improved transportation system efficiency, cleaner fuels, cleaner vehicles, and reduction in the growth of vehicle hours traveled.

Climate change and its associated effects are also being addressed through various efforts at the federal level to improve fuel economy and energy efficiency, such as the "National Clean

Car Program" and Executive Order 13514- *Federal Leadership in Environmental, Energy and Economic Performance*.

Executive Order 13514 (October 5, 2009) focused on reducing greenhouse gases internally in federal agency missions, programs and operations, but also directs federal agencies to participate in the interagency Climate Change Adaptation Task Force, which is engaged in developing a U.S. strategy for adaptation to climate change.

The U.S. Environmental Protection Agency's authority to regulate greenhouse gas emissions stems from the U.S. Supreme Court decision in *Massachusetts v. Environmental Protection Agency*, 549 U.S. 497 (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, the 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. So, 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 the Environmental Protection Agency's regulatory actions. The 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 trucks in April 2010 (http//www.c2es.org/federal/executive/greenhouse-gas-regualtion-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 made 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 imposed 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.

On August 28, 2012, U.S. Environmental Protection Agency and the National Highway Traffic Safety Administration issued a Final Rulemaking to extend the Nation 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 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 carbon dioxide 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.

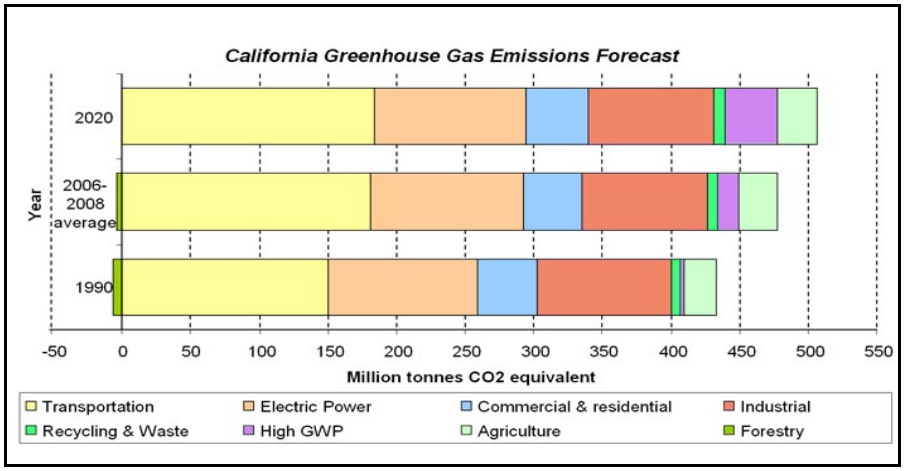
Project Analysis

An individual project does not generate enough greenhouse gas emissions to significantly influence global climate change. Rather, global climate change is a cumulative impact. This means that a project may participate in a potential impact through its incremental contribution combined with the contributions of all other sources of greenhouse gases. This approach is supported by the Association of Environmental Professionals: *Recommendations by the Association of Environmental Professionals on How to Analyze GHG Emissions and Global Climate Change in CEQA Documents* (March 5, 2007), as well as the South Coast Air Quality District (Chapter 6: *The CEQA Guide*, April 2011) and the U.S. Forest Service (*Climate Change Considerations in Project Level NEPA Analysis*, July 13, 2009).

In assessing cumulative impacts, it must be determined if a project's incremental effect is "cumulatively considerable" (California Environmental Quality Act Guidelines Sections 15064(h)(1) and 15130). For a determination to be made, 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 in order to make this determination is a difficult if not impossible task.

The AB 32 Scoping Plan mandated by AB 32 includes the main strategies California will use to reduce greenhouse gas. As part of its supporting documentation for the Draft Scoping Plan, the California Air Resources Board released the greenhouse gas inventory for California (last updated October 28, 2010). See Figure 2-4. The forecast is an estimate of the emissions expected to occur in 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.



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

Figure 2-4 California Greenhouse Gas Forecast

Caltrans and its parent agency, the California State Transportation Agency (formerly, Business, Transportation, and Housing Agency), have taken an active role in addressing greenhouse gas emission reduction and climate change. Recognizing that 98 percent of California's greenhouse gas emissions are from the burning of fossil fuels and 40 percent of all human-made greenhouse gas emissions are from transportation, the Department has created and is implementing the Climate Action Program at Caltrans that was published in December 2006 (see Climate Action Program at Caltrans (December 2006). 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

One of the main strategies in Caltrans' Climate Action Program to reduce greenhouse gas emissions is to make California's transportation system more efficient. The highest levels of carbon dioxide from mobile sources, such as automobiles, occur at stop-and-go speeds (0–25 miles per hour) and speeds over 55 miles per hour; the most severe emissions occur from 0–25 miles per hour (see Figure 2-5). To the extent that a project relieves congestion by enhancing operations and improving travel times in high congestion travel corridors, greenhouse gas emissions, particularly carbon dioxide, may be reduced.

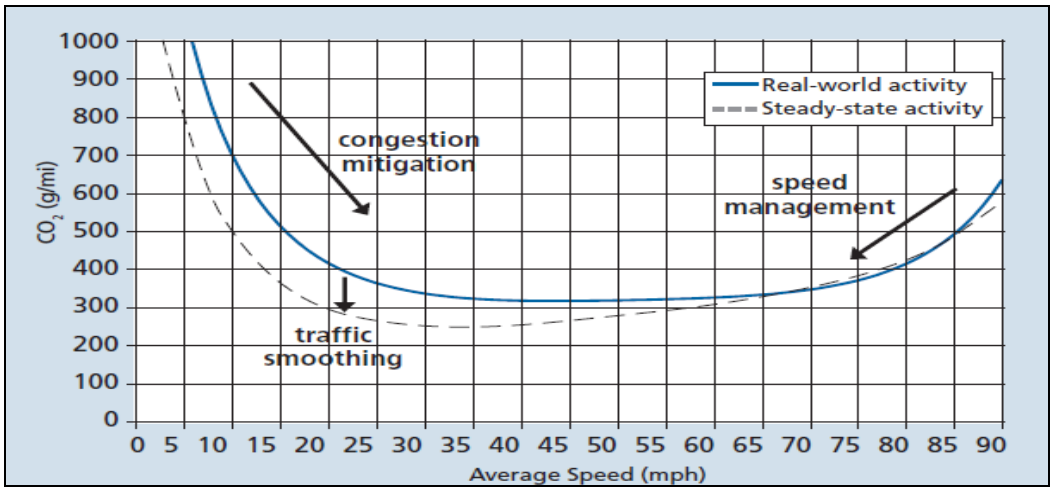


Figure 2-5 Possible Effect of Traffic Operation Strategies in Reducing On-Road Carbon Dioxide Emission

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

Many studies show that an increase in traffic volume is related to higher overall carbon dioxide emissions. Traffic volumes are expected to increase under future conditions; however, operation of the project would increase traffic speed and flow, decrease congestion, and improve level of service along the project alignment. Widening the highway would increase traffic capacity, which tends to reduce congestion. Restoration of a free-flowing traffic pattern would reduce the amount of carbon dioxide emissions.

According to the 2011 Final Regional Transportation Plan, the Kern Council of Governments has invested significant resources adding signals in place of four-way stops, synchronizing signals (which will be a part of this project), monitoring traffic, and providing a metropolitan traffic operations center. Significant reductions in vehicle emissions resulting from unnecessary idling and acceleration have been realized.

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

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

Use of the plans and programs stated above are designed to decrease vehicle miles traveled, reduce congestion at intersections, and improve traffic flow throughout the region. With these improvements, carbon dioxide emissions are expected to decrease from the vehicles using the roadway.

As discussed under Alternatives Considered but Eliminated from Further Discussion (in Section 1.3), several alternatives were considered but not carried forward because they did not meet the project objectives or were not possible because they would cost more than available funding. The eliminated alternatives included a build alternative, the State Route 99/Hageman Road interchange, and a transportation system management alternative. Though the transportation system management alternative was not carried forward as a separate alternative, components of the alternative such as signal optimization have been incorporated into the Build Alternative.

Quantitative Analysis

A quantitative analysis estimating carbon dioxide emissions for existing, no-build, and build conditions was performed using Caltrans' CT-EMFAC. Model forecasts are shown in Table 2.11; the amount of daily vehicle miles traveled is expected to decrease under the Build Alternative when compared with the No-Build Alternative for 2015 and 2035.

Table 2.11 Forecast of Build Alternative vs. No-Build Alternative Regional Vehicle Miles Traveled

Evaluation Period	Daily Vehicle Miles Traveled		
	No-Build Alternative	Build Alternative	Project Effect
Baseline Year 2006	22,428,632	Not Available	Not Available
Opening Year 2015	26,843,451	26,831,393	(12,058)
Horizon Year 2035	42,051,904	42,040,650	(11,254)

Source: Parsons, July 2009.

Traffic totals shown in Table 2.11, along with the California Mobile Source Emission Inventory and Emission Factors model emission rates, were used to calculate the carbon dioxide emissions based on 2015 and 2035 regional travel conditions. The forecast of carbon dioxide emissions is provided in Table 2.12.

Table 2.12 Carbon Dioxide Emissions Comparisons, Existing and Future

Evaluation Period	Tons per Day Carbon Dioxide Emissions		
	No-Build Alternative	Build Alternative	Percent Change
Baseline Year 2006	12,546	Not Available	Not Available
Opening Year 2015	14,916	14,832	- 0.6%
Horizon Year 2035	23,028	23,060	+ 0.1%

Source: ICF Jones & Stokes, July 2009 (CT-EMFAC output sheets are provided in Appendix A of the Air Quality Report).

As shown in Table 2.12, the modeled carbon dioxide emissions in 2015 and 2035 are higher than those for 2006 (baseline year). In 2015 (opening year), modeled carbon dioxide emissions would be reduced by 0.6 percent under the Build Alternative when compared to the No-Build Alternative. In 2035 (horizon year), modeled carbon dioxide emissions would be increased by 0.1 percent under the Build Alternative compared to the No-Build Alternative. The conclusion is that the project would result in reduced carbon dioxide emissions for 2015 compared to the No-Build Alternative, while the 2035 Build Alternative would result in a slight increase of carbon dioxide emissions compared to the future No-Build Alternative. This is because carbon dioxide emissions increase as travel speeds exceed 45 miles per hour. This phenomenon is shown in Figure 2-5.

In 2035, the benefits of reduced regional vehicle miles traveled would be offset by the increases in carbon dioxide emissions factors associated with improved travel speeds.

The estimated emissions shown in Table 2.12 are calculated for only a comparison between alternatives. The numbers are not necessarily an accurate reflection of what the true carbon dioxide emissions would be because carbon dioxide emissions depend on other factors that are not part of the model, such as the fuel mix, rate of acceleration, and the aerodynamics and efficiency of the vehicles. California Mobile Source Emission Inventory and Emission Factors model emission rates are only for direct engine-out carbon dioxide emissions, not full fuel cycle. Fuel cycle emission rates can vary dramatically depending on the amount of additives like ethanol and the source of the fuel components.

Construction Emissions

Greenhouse gas emissions for transportation projects can be divided into those produced during construction and those produced during operations. Construction greenhouse gas emissions include those produced as a result of material processing, emissions produced by onsite construction equipment, and emissions arising from traffic delays during construction. These emissions will be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction.

With innovations such as longer pavement lives, improved traffic management plans, and changes in materials, greenhouse gas emissions during construction can be mitigated to some degree by longer intervals between maintenance and rehabilitation activities.

Limitations and Uncertainties with Modeling California Mobile Source Emission Inventory and Emission Factors Model (EMFAC)

Although the Emission Factor Model can calculate carbon dioxide emissions from mobile sources, the model does have limitations when it comes to accurately reflecting carbon dioxide emissions. According to the National Cooperative Highway Research Program report, *Development of a Comprehensive Modal Emission Model* (April 2008) and a 2009 University of California study (Matthew Bartha and Kanok Boriboonsomsin, *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), brief but rapid accelerations can contribute significantly to a vehicle's carbon monoxide and hydrocarbon emissions during a typical urban trip. Current emission-factor models are insensitive to the distribution of such modal events (i.e., cruise, acceleration, deceleration, and idle) in the operation of a vehicle and instead estimate emissions by average trip speed. This limitation creates an uncertainty in the model's results when compared to the estimated emissions of the various alternatives with baseline in an attempt to determine impacts.

Although work by the 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.

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

> REVISION: Both the EMFAC and OFFROAD Models develop CO_2 and CH_4 [methane] 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. . . However, [California Air Resources Board] is working towards reconciling the emission estimates from the fuel usage approach and the models.

Other Variables

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

First, vehicle fuel economy is increasing. The Environmental Protection Agency's annual report, "*Light-Duty Automotive Technology and Fuel Economy Trends: 1975 through 2012 (http://www.epa.gov/oms/fetrends.htm)*," which provides data on the fuel economy and

technology characteristics of new light-duty vehicles including cars, minivans, sport utility vehicles, and pickup trucks, confirms that average fuel economy has improved each year beginning in 2005, and is now 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 Environmental Protection Agency estimates that light-duty fuel economy rose by 16 percent from 2007 to 2012. Table 2.13 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 CAFE Standards.

Table 2.13 Required Miles Per Gallon by Model Year

Type	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	26.0	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 emission vehicles will come into the market during the design life of this project. According to the 2013 Annual Energy Outlook (AEO2013):

> "LDVs that use diesel, other alternative fuels, hybrid-electric, or all-electric systems play a significant role in meeting more stringent greenhouse gas emissions and CAFÉ standards over the projection period. Sales of such vehicles increase from 20 percent of all LDV sales in 2011 to 49 percent in 2040 in the AEO2013 Reference case (http//ww.eia.gov/forecasts/aeo/pdf/0383(2013).pdf).

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 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.

Fourth, driver behavior has been changing as the U.S. economy and oil prices have changed. In its January 2008 report, "*Effects of Gasoline Prices on Driving Behavior and Vehicle Market*," (http://www.cbo.gov/ftpdocs/88xx/doc8893/01-14-GasolinePrices.pdf), the Congressional Budget Office found the following results based on data collected from California: 1) freeway motorists have adjusted to higher gas prices by making fewer trips and driving more slowly; 2) the market share 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 demand for the more fuel-efficient vehicles. More recent reports from the Energy Information Agency and Bureau of Economic Analysis 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 a gallon and beyond.

Limitations and Uncertainties with Impact Assessment

Taken from the National Highway Traffic Safety Administration Final Environmental Impact Study for Model Year 2017-2015 Corporate Average Fuel Economy Standards (July 2012), Figure 2-6 shows 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. As indicated in Figure 2-6, the emissions estimates used in this Environmental Impact Statement 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 effects 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 (http//www.nhtsa.gov/staticfiles/rulemaking/pdf/FINAL_EIS.pdf.page 5-22)."

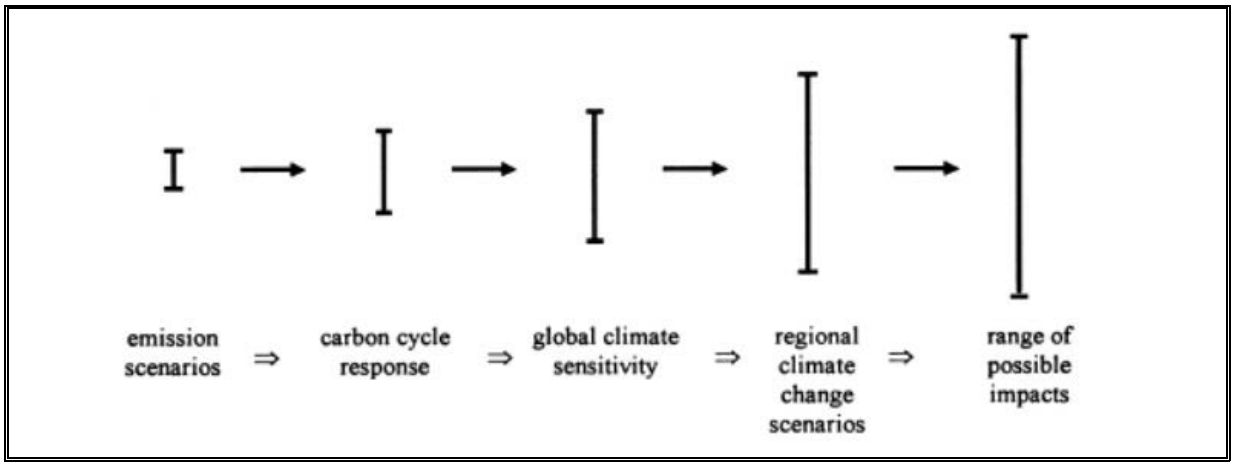


Figure 2-6 Cascade of Uncertainties

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 increase in carbon dioxide emissions would mean for climate change given the overall California greenhouse gas emissions inventory of approximately 430 million tons of carbon dioxide equivalent. This uncertainty only increases when viewed globally.

The Intergovernmental Panel on Climate Change has created multiple scenarios in its document entitled, *Climate Change 2007: The Physical Science Basis: Summary for Policy Makers*, to project potential future global greenhouse gas emissions as well as to evaluate potential changes in global temperature, other climate changes, and their effect on human and natural systems. These scenarios vary in terms of the type of economic development, the amount of overall growth, and the steps taken to reduce greenhouse gas emissions. Non-mitigation Intergovernmental Panel on Climate Change scenarios project an increase in global greenhouse gas emissions by 9.7 up to 36.7 billion metric tons of carbon dioxide from 2000 to 2030, which represents an increase of between 25 and 90 percent. (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.).

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

As discussed above, both the future with-project and the future no-build scenario show increases in carbon dioxide emissions over the existing levels; the future build carbon dioxide emissions are higher than the future no-build emissions. In addition, as discussed above, there are also limitations with the California Mobile Source Emission Inventory and Emission Factors model 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 contribution on the cumulative scale to climate change. However, Caltrans is firmly committed to implementing measures to help reduce the potential effects of the project. These measures are outlined in the following section.

Greenhouse Gas Reduction Strategies

Assembly Bill 32 Compliance

Caltrans continues to be actively involved on the Governor's Climate Action Team as California Air Resources Board works to implement the Executive Orders S-3-05 and S-01-07 and help achieve the targets set forth in Assembly Bill 32. Many of the strategies Caltrans is using to help meet the targets in Assembly Bill 32 come from former-Governor Arnold Schwarzenegger's California Strategic Growth Plan, which is updated each year. The Strategic Growth Plan targeted a significant decrease in traffic congestion below 2008 levels and a corresponding reduction in greenhouse gas emissions. The Strategic Growth Plan proposes to do this 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 2-7: Mobility Pyramid.

Figure 2-7 Mobility Pyramid

Caltrans is supporting efforts to reduce vehicle miles traveled by planning and implementing smart land use strategies: job/housing proximity, developing transit-oriented communities, and high density housing along transit corridors. Caltrans works closely with local jurisdictions on planning activities; however, Caltrans does not have local land use planning authority.

Caltrans is also supporting efforts to improve the energy efficiency of the transportation sector by increasing vehicle fuel economy in new cars, light- and heavy-duty trucks; Caltrans is doing this by supporting ongoing research efforts at universities, by supporting legislative efforts to increase fuel economy, and by participating on the Climate Action Team. It is important to note, however, that the control of the fuel economy standards is held by the U.S. Environmental Protection Agency and the California Air Resources Board.

Caltrans is also working toward enhancing the state's transportation planning process to respond to future SB 375 requirements. Senate Bill 391 (Liu 2009) requires the state's long-range transportation plan to meet California's climate change goals under Assembly Bill 32.

The California Transportation Plan is a statewide, long-range transportation plan to meet our future mobility needs and reduce greenhouse gas emissions. The 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 reductions while meeting the state's transportation needs.

Table 2.14 shows the efforts that Caltrans is implementing to reduce greenhouse gas emissions. More detailed information about each strategy is included in the Climate Action Program at Caltrans (December 2006).

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 Caltrans decisions and activities. Caltrans Activities to Address Climate Change (April 2013) provides a comprehensive overview of activities undertaken by Caltrans statewide to reduce greenhouse gas emissions resulting from agency operations.

The following measures will also be included in the project to reduce the greenhouse gas emissions and potential climate change impacts from the project:

- Use of Reclaimed Water—Currently 30 percent of the electricity used in California is used for the treatment and delivery of water. Use of reclaimed water helps conserve this energy, which reduces greenhouse gas emissions from electricity production.
- Landscaping—Landscaping reduces surface warming and through photosynthesis decreases carbon dioxide.
- Portland Cement—Use of lighter color surfaces such as Portland cement helps to reduce the albedo effect (measure of how much light a surface reflects) and cool the surface; in addition, Caltrans has been a leader in the effort to add fly ash to Portland cement mixes. Adding fly ash reduces the greenhouse gas emissions associated with cement production. It also can make the pavement stronger.
- Lighting—Use of energy efficient lighting, such as LED traffic signals.
- Idling restrictions—Placing idling restrictions for trucks and equipment at construction sites reduces fuel usage.

Table 2.14 Climate Change/Carbon Dioxide Reduction Strategies

Strategy	Program	Partnership		Method/Process	Estimated CO_2 Savings (MMT)	
		Lead	Agency		2010	2020
Smart Land Use	Intergovernmental Review (IGR)	Caltrans	Local Governments	Review and seek to mitigate development proposals	Not Estimated	Not Estimated
	Planning Grants	Caltrans	Local and regional agencies & 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 & Intelligent Trans. System (ITS) Deployment	Strategic Growth Plan	Caltrans	Regions	State ITS; Congestion Management Plan	.007	2.17
Mainstream Energy & Greenhouse Gas into Plans and Projects	Office of Policy Analysis & Research; Division of Environmental Analysis	Interdepartmental effort		Policy establishment, guidelines, technical assistance	Not Estimated	Not Estimated
Educational & Information Program	Office of Policy Analysis & Research	Interdepartmental, California Environmental Protection Agency, California Air Resources Board, California Energy Commission		Analytical report, data collection, publication, workshops, outreach	Not Estimated	Not Estimated
Fleet Greening & Fuel Diversification	Division of Equipment	Department of General Services		Fleet Replacement B20 B100	0.0045	0.0065 0.45 .0225
Non-vehicular Conservation Measures	Energy Conservation Program	Green Action Team		Energy Conservation Opportunities	0.117	.34
Portland Cement	Office of Rigid Pavement	Cement and Construction Industries		2.5 % limestone cement mix 25% fly ash cement mix > 50% fly ash/slag mix	1.2 0.36	4.2 3.6
Goods Movement	Office of Goods Movement	California Environmental Protection Agency, California Air Resources Board, Business Transportation and Housing Agency; Metropolitan Planning Organizations		Goods Movement Action Plan	Not Estimated	Not Estimated
Total					2.72	18.18

As described in Chapter 1, an extension of Hageman Road and connection with Golden State Avenue (State Route 204) would be built in 2016. The implementation of this feature would substantially reduce congestion and idling at this location, thereby reducing carbon dioxide emissions.

Adaptation Strategies

"Adaptation strategies" refer to how Caltrans and others can plan for the effects of climate change on the state's transportation infrastructure and strengthen or protect the facilities from damage. Climate change is expected to produce increased variability in precipitation, rising temperatures, rising sea levels, storm surges and intensity, and the frequency and intensity of wildfires. These changes may affect the transportation infrastructure in various ways, such as damaging roadbeds by longer periods of intense heat; increasing storm damage from flooding and erosion; and inundating land from rising sea levels. These effects will vary by location and may, in the most extreme cases, require that a facility be relocated or redesigned. There may also be economic and strategic ramifications as a result of these types of impacts to the transportation infrastructure.

At the federal level, the Climate Change Adaptation Task Force, co-chaired by the Council on Environmental Quality, the Office of Science and Technology Policy, and the National Oceanic and Atmospheric Administration, released its interagency task force report on October 28, 2011 (http//www.whitehouse.gov/administration/eop/ceq/initiatives/adaptation), 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.

Along with addressing future 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 (December 2009). The Climate Adaptation Strategy, which summarizes the best-known science on climate change impacts to California, assesses California's vulnerability to the identified impacts and then outlines 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, which 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; State of California Transportation Agency (formerly, Business, Transportation and Housing); Health and Human Services; and 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.

The National Academy of Science was directed to prepare a *Sea Level Rise Assessment Report*, to recommend how California should plan for future sea level rise. The report was released in June 2012 and included:

- The 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.
- The range of uncertainty in selected sea level rise projections.
- A synthesis of existing information on projected sea level rise impacts to state infrastructure (such as roads, public facilities and beaches), natural areas, and coastal and marine ecosystems.
- A discussion of future research needs regarding sea level rise for California.

In 2010, interim guidance was released by the Coastal Ocean Climate Action Team as well as Caltrans as a method to initiate action and discussion of potential risks to the state's infrastructure due to project sea level rise. Subsequently, the Coastal Ocean Climate Action

Team updated the Sea Level Rise guidance to include information in the National Academy's study.

All state agencies that are planning to construct projects in areas vulnerable to future sea level rise were directed to consider a range of sea level rise scenarios for 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.

However, all projects that have filed a Notice of Preparation as of the date of Executive Order S-13-08, and/or are programmed for construction funding from 2008 through 2013, or are routine maintenance projects may, but are not required to, consider these planning guidelines. The 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 State of California Transportation Agency (formerly, Business, Transportation and Housing Agency) to prepare a report to assess vulnerability of transportation systems to sea level rise affecting safety, maintenance and operational improvements of the system, and economy of the state. Caltrans continues to work on assessing the transportation system vulnerability to climate change, including the effect of sea level rise.

Currently, Caltrans is working to assess which transportation facilities are at greatest risk from climate change effects. However, without statewide planning scenarios for relative sea level rise and other climate change impacts, the Department 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, the Department will be able to 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, the increased frequency and intensity of storms and wildfires, rising temperatures, and rising sea levels. Caltrans is an active participant in 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 Sea Level Rise Assessment report.

Chapter 3 Comments and Coordination

Early and continuing coordination with the general public and appropriate public agencies is an essential part of the environmental process to determine the scope of environmental documentation, the level of analysis, potential impacts and mitigation measures, and related environmental requirements. Agency consultation and public participation for this project have been accomplished through a variety of formal and informal methods, including project development team meetings, interagency coordination meetings, and coordination with Native American individuals and organizations. This chapter summarizes the results of Caltrans' efforts to identify, address, and resolve project-related issues through early and continuing coordination.

The following is the summary of all meetings, correspondence, and/or coordination that were relevant for the development of the proposed project.

U.S. Fish and Wildlife Service and California Department of Fish and Wildlife Coordination

A species list was received from U.S. Fish and Wildlife Service in May 2009, and an updated species list was received in September 2011.

Between 2007 and early 2010, biologists consulted with the City of Bakersfield, California Department of Fish and Wildlife and U.S. Fish and Wildlife Service on kit fox field surveys and mitigation options for specific impacts. Contact was made with a kit fox specialist from the Endangered Species Recovery Program and other various environmental consultants for more information about kit fox distribution, abundance, and ecology in the metropolitan Bakersfield area. A Biological Assessment was submitted to the Service in October 2013.

Cultural Resources and Historical Societies

On May 26, 2009, letters were sent to the following interested parties who could have knowledge or concerns about historic properties in the area: City of Bakersfield Planning Department; Kern County Planning Department; American Oil and Gas Historical Society; California Oil Museum; Bakersfield College Library; Bakersfield Museum of Art; Beale Memorial Branch Library; Buena Vista Museum of Natural History; California State University, Bakersfield library; California Historical Society; California Preservation Foundation; Kern County Historical Society; Kern County Museum; Kern Genealogical Society; Ridge Route Communities Historical Society; and Southern San Joaquin Valley Information Center.

Information regarding any historic buildings, districts, sites, objects, or archeological sites of significance within the project area was requested. No written replies were received from the above organizations and entities.

State Office of Historic Preservation

On September 21, 2010, the State Office of Historic Preservation issued a response letter to Caltrans, District 6, regarding a request for concurrence that the portion of U.S. Highway 99 within the project limits was eligible for listing in the National Register of Historic Places and the Master List of State-Owned Historical Resources. The State Historic Preservation Officer concurred with this determination, and the segment of Golden State Avenue (State Route 204) was added to the Master List of State-owned Historical Resources. On December 13, 2011, the State Historic Preservation Officer re-affirmed this determination and, at Caltrans' request, corrected the historic property boundaries.

Native American Heritage Commission

On June 11, 2007, archaeologists contacted the Native American Heritage Commission regarding 13 Thomas Roads Improvement Program projects, including the Hageman Road Extension project. The Native American Heritage Commission received a letter and maps showing the project location. The letter requested that the Native American Heritage Commission search its Sacred Lands Database and provide a list of potentially interested Native American representatives for the project area.

The Native American Heritage Commission responded in writing on June 21, 2007, stating that a search of its Sacred Lands Database did not yield any sacred lands or traditional cultural properties within the 13 Thomas Roads Improvement Program project areas. The Native American Heritage Commission was contacted again on June 2, 2009. The commission responded on July 1, 2009, stating that its Sacred Lands Database did not yield any sacred lands or traditional cultural properties within the area of potential effects.

Department of Conservation

A letter was sent to the Department of Conservation's Division of Oil, Gas, and Geothermal Resources for information on oil, gas, and geothermal wells at the project site associated with historic-era use of Parcel Numbers 116-010-372 and -398. The division responded August 25, 2009, giving recommendations for further review and investigation of potential petroleum hydrocarbon and/or solvents, plus remedial actions as necessary.

U.S. Environmental Protection Agency and Federal Highway Administration

A letter was sent to the U.S. Environmental Protection Agency and the Federal Highway Administration on March 16, 2010 requesting concurrence with the conclusion that the

proposed project would not be considered a project of air quality concern as stated in the Environmental Protection Agency Transportation Conformity Determination Guidance.

On April 12, 2010, the agencies concurred that the project would not be considered a project of air quality concern.

Chapter 4 List of Preparers

This document was prepared and reviewed by the following professional staff:

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Kirsten Helton, Senior Environmental Planner. B.A., Economics, California State University, Fresno; 18 years of environmental planning experience. Contribution: Environmental oversight supervision and NEPA quality control review.

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Philip Vallejo, PQS—Principal Architectural Historian, Central California Cultural Resources Branch. B.A., History, California State University, Fresno; 7 years of

architectural history experience. Contribution: Oversight review of the Historic Resources Evaluation Report.

Dan Waterhouse, Associate Environmental Planner. B.S., Business Administration, California State University, Fresno; 25 years of environmental planner experience. Contribution: Preparation of the environmental document.

Consultant Staff

James R. Allen, Professional Geologist, CSU East Bay. 10 years of experience in preparing paleontological resource assessments with specialized training in paleontological research, administration, management. Contribution: Author of the Paleontological Identification/Evaluation Report.

Mario Anaya, Environmental Planner, ICF. 1 year of environmental planning experience. Contribution: Author of the Community Impact Assessment.

Keith Cooper, Senior Air Quality and Climate Change Specialist, ICF. 14 years of experience. Contribution: Author of the Air Quality Study Report.

Peter Hardie, Noise Analyst, ICF. 5 years of experience. Contribution: Author of the Noise Study Report.

James Hickman, Biologist, ICF. 4 years of experience. Contribution: Author of the Natural Environment Study.

Elizabeth Hilton, Architectural Historian, PQS, ICF. 8 years of experience in conducting architectural/historic surveys, including Section 106 and California Environmental Quality Act compliance. Contribution: Author of the Historic Property Survey Report.

Laura Long, Environmental Engineer, Blackburn Consulting. 24 years of experience. Contribution: Author of the Initial Site Assessment.

Alice McKee, Registered Landscape Architect (CRLA 4268), ICF. 15 years of experience as a landscape architect, visual analyst, and project manager. Contribution: Author of the Visual Impact Assessment.

Daniel Paul, Architectural Historian (PQS), ICF. 13 years of experience in conducting architectural/historic surveys, including Section 106 and California Environmental

Quality Act compliance. Contribution: Author of the Historic Resources Evaluation Report.

Mark Robinson, Senior Archaeologist/Principal Investigator, ICF. 14 years of experience in southern California archaeology. Contribution: Author of the Archaeological Survey Report.

Russell Sweet, Biologist, ICF. 9 years of experience. Contribution: Author of the Natural Environment Study, Biological Assessment, and Jurisdictional Delineation.

Robert Wong, PE, Senior Hydrology/Hydraulics Engineer, AECOM. 12 years of experience in civil engineering and hydrology and hydraulics analyses. Contribution: Author of the Water Quality Assessment.

Appendix A California Environmental Quality Act Checklist

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

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

CEQA Environmental Checklist

This checklist identifies physical, biological, social, and economic factors that might be affected by the proposed project. In many cases, background studies performed in connection with the projects indicate no impacts. A NO IMPACT answer in the last column reflects this determination. Where there is a need for clarifying discussion, the discussion is included either following the applicable section of the checklist or is within the body of the environmental document itself. The words "significant" and "significance" used throughout the following checklist are related to CEQA, not NEPA, impacts. The questions in this form are intended to encourage the thoughtful assessment of impacts and do not represent thresholds of significance.

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation	Less-than-Significant Impact	No Impact
I. AESTHETICS: Would the project:				
a) Have a substantial adverse effect on a scenic vista	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway	☐	☐	☐	☒
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☒	☐	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☒	☐	☐
II. AGRICULTURE AND FOREST RESOURCES: In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Dept. of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation	Less-than-Significant Impact	No Impact
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	☐	☐	☐	☒
d) Result in the loss of forest land or conversion of forest land to non-forest use?	☐	☐	☐	☒
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?	☐	☐	☐	☒
	☐	☐	☒	☐
III. AIR QUALITY: Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☐	☒
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☐	☒
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non- attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☐	☒
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☐	☒
IV. BIOLOGICAL RESOURCES: Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Wildlife or US Fish and Wildlife Service?	☐	☐	☐	☒

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation	Less-than-Significant Impact	No Impact
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☒	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☒	☐	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☐	☒
V. CULTURAL RESOURCES: Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	☐	☐	☐	☒
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☒
VI. GEOLOGY AND SOILS: Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☐	☒	☐
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42?	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☐	☒

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation	Less-than-Significant Impact	No Impact
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse?	☐	☒	☐	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☐	☒
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☐	☒

VII. GREENHOUSE GAS EMISSIONS: Would the project:

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

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

An assessment of the greenhouse gas emissions and climate change is included in the body of environmental document. While the City has included this good faith effort in order to provide the public and decision-makers as much information as possible about the project, it is the City's determination that in the absence of further regulatory or scientific information related to greenhouse gas emissions and CEQA significance, it is too speculative to make a significance determination regarding the project's direct and indirect impact with respect to climate change. The City of Bakersfield does remain firmly committed to implementing measures to help reduce the potential effects of the project. These measures are outlined in the body of the environmental document.

VIII. HAZARDS AND HAZARDOUS MATERIALS: Would the project:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☐	☒
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☐	☐	☒
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☒	☐	☐

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation	Less-than-Significant Impact	No Impact
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☒	☐
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒

IX. HYDROLOGY AND WATER QUALITY: Would the project:

a) Violate any water quality standards or waste discharge requirements?	☐	☐	☐	☒
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☒
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?	☐	☒	☐	☐
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?	☐	☐	☐	☒
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☒	☐	☐
f) Otherwise substantially degrade water quality?	☐	☐	☐	☒
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation	Less-than-Significant Impact	No Impact
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j) Inundation by seiche, tsunami, or mudflow	☐	☐	☐	☒
X. LAND USE AND PLANNING: Would the project:				
a) Physically divide an established community?	☐	☐	☐	☒
b)Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☐	☒	☐
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒
XI. MINERAL RESOURCES: Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	☐	☐	☐	☒
b) Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	☐	☐	☐	☒
XII. NOISE: Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☒	☐
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☒	☐
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation	Less-than-Significant Impact	No Impact
XIII. POPULATION AND HOUSING: Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
XIV. PUBLIC SERVICES:				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:	☐	☐	☒	☐
Fire protection?	☐	☐	☒	☐
Police protection?	☐	☐	☒	☐
Schools?	☐	☐	☒	☐
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☒	☐
XV. RECREATION:				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation	Less-than-Significant Impact	No Impact
XVI. TRANSPORTATION/TRAFFIC: Would the project:				
a) Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	☐	☐	☐	☒
b) Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	☐	☐	☐	☒
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒
e) Result in inadequate emergency access?	☐	☐	☒	☐
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	☐	☐	☐	☒
XVII. UTILITIES AND SERVICE SYSTEMS: Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☐	☒
c) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	☐	☐	☒	☐
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e) Result in a determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒

	Potentially Significant Impact	Less-than-Significant Impact with Mitigation	Less-than-Significant Impact	No Impact
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	☐	☐	☐	☒
g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒
XVIII. MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☒	☐
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	☐	☐	☒	☐
c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☒

Appendix B Title VI Policy Statement

STATE OF CALIFORNIA—BUSINESS, TRANSPORTATION AND HOUSING AGENCY EDMUND G. BROWN Jr., Governor

DEPARTMENT OF TRANSPORTATION
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March 16, 2012

NON-DISCRIMINATION
POLICY STATEMENT

The California Department of Transportation, under Title VI of the Civil Rights Act of 1964 and related statutes, ensures that no person in the State of California shall, on the grounds of race, color, national origin, sex, disability, religion, sexual orientation, or age, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity it administers.

For information or guidance on how to file a complaint based on the grounds of race, color, national origin, sex, disability, religion, sexual orientation, or age, please visit the following web page: http://www.dot.ca.gov/hq/bep/title_vi/t6_violated.htm.

Additionally, if you need this information in an alternate format, such as in Braille or in a language other than English, please contact Mario Solis, Manager, Title VI and Americans with Disabilities Act Program, California Department of Transportation, 1823 14th Street, MS-79, Sacramento, CA 95811. Phone: (916) 324-1353, TTY 711, fax (916) 324-1869, or via email: *mario_solis@dot.ca.gov*.

MALCOLM DOUGHERTY
Acting Director

"Caltrans improves mobility across California"

Appendix C Summary of Relocation Benefits

The City of Bakersfield will be the agency responsible for acquiring the necessary right-of-way for the project. The City will follow the Caltrans Relocation Assistance Program:

California Department of Transportation Relocation Assistance Program

Declaration of Policy

"The purpose of this title is to establish a ***uniform policy for fair and equitable treatment*** of persons displaced as a result of federal and federally assisted programs in order that such persons ***shall not suffer disproportionate injuries*** as a result of programs designed for the benefit of the public as a whole."

The Fifth Amendment to the U.S. Constitution states, "No Person shall…be deprived of life, liberty, or property, without due process of law, nor shall private property be taken for public use without just compensation." The Uniform Act sets forth in statute the due process that must be followed in Real Property acquisitions involving federal funds. Supplementing the Uniform Act is the government-wide single rule for all agencies to follow, set forth in 49 *Code of Federal Regulations*, Part 24. Displaced individuals, families, businesses, farms, and nonprofit organizations may be eligible for relocation advisory services and payments, as discussed below.

Fair Housing

The Fair Housing Law (Title VIII of the Civil Rights Act of 1968) sets forth the policy of the United States to provide, within constitutional limitations, for fair housing. This Act, and as amended, makes discriminatory practices in the purchase and rental of most residential units illegal. Whenever possible, minority persons shall be given reasonable opportunities to relocate to any available housing regardless of neighborhood, as long as the replacement dwellings are decent, safe, and sanitary and are within their financial means. This policy, however, does not require the agency responsible (City of Bakersfield and/or County of Kern) to provide a person a larger payment than is necessary to enable a person to relocate to a comparable replacement dwelling.

Any persons to be displaced will be assigned to a relocation advisor, who will work closely with each displacee in order to see that all payments and benefits are fully utilized, and that all regulations are observed, thereby avoiding the possibility of displacees jeopardizing or forfeiting any of their benefits or payments. At the time of the initiation of negotiations (usually the first written offer to purchase), owner-occupants are given a detailed explanation of the state's relocation services. Tenant occupants of properties to be acquired are contacted

soon after the initiation of negotiations, and also are given a detailed explanation of the Caltrans Relocation Assistance Program. To avoid loss of possible benefits, no individual, family, business, farm, or nonprofit organization should commit to purchase or rent a replacement property without first contacting a Caltrans relocation advisor.

Relocation Assistance Advisory Services

In accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, the agency responsible (City of Bakersfield and/or County of Kern) will provide relocation advisory assistance to any person, business, farm or nonprofit organization displaced as a result of the acquisition of real property for public use, so long as they are legally present in the United States. The agency responsible (City of Bakersfield and/or County of Kern) will assist eligible displacees in obtaining comparable replacement housing by providing current and continuing information on the availability and prices of both houses for sale and rental units that are "decent, safe and sanitary." Nonresidential displacees will receive information on comparable properties for lease or purchase (For business, farm and nonprofit organization relocation services, see below).

Residential replacement dwellings will be in a location generally not less desirable than the displacement neighborhood at prices or rents within the financial ability of the individuals and families displaced, and reasonably accessible to their places of employment. Before any displacement occurs, comparable replacement dwellings will be offered to displacees that are open to all persons regardless of race, color, religion, sex, national origin, and consistent with the requirements of Title VIII of the Civil Rights Act of 1968. This assistance will also include the supplying of information concerning Federal and State assisted housing programs, and any other known services being offered by public and private agencies in the area.

Persons who are eligible for relocation payments and who are legally occupying the property required for the project will not be asked to move without first being given at least 90 days written notice. Residential occupants eligible for relocation payment(s) will not be required to move unless at least one comparable "decent, safe and sanitary" replacement dwelling, available on the market, is offered to them by the agency responsible (City of Bakersfield and/or County of Kern).

Residential Relocation Payments

The Relocation Assistance Program will help eligible residential occupants by paying certain costs and expenses. These costs are limited to those necessary for or incidental to the purchase or rental of a replacement dwelling and actual reasonable moving expenses to a new

location within 50 miles of the displacement property. Any actual moving costs in excess of the 50 miles are the responsibility of the displacee. The Residential Relocation Assistance Program can be summarized as follows:

Moving Costs

Any displaced person, who lawfully occupied the acquired property, regardless of the length of occupancy in the property acquired, will be eligible for reimbursement of moving costs. Displacees will receive either the actual reasonable costs involved in moving themselves and personal property up to a maximum of 50 miles, or a fixed payment based on a fixed moving cost schedule. Lawful occupants who move into the displacement property after the initiation of negotiations must wait until the agency responsible (City of Bakersfield and/or County of Kern) obtains control of the property in order to be eligible for relocation payments.

Purchase Differential

In addition to moving and related expense payments, fully eligible homeowners may be entitled to payments for increased costs of replacement housing.

Homeowners who have owned and occupied their property for 180 days or more prior to the date of the initiation of negotiations (usually the first written offer to purchase the property), may qualify to receive a price differential payment and may qualify to receive reimbursement for certain nonrecurring costs incidental to the purchase of the replacement property. An interest differential payment is also available if the interest rate for the loan on the replacement dwelling is higher than the loan rate on the displacement dwelling, subject to certain limitations on reimbursement based upon the replacement property interest rate. The maximum combination of these three supplemental payments that the owner-occupant can receive is $22,500. If the total entitlement (without the moving payments) is in excess of $22,500, the Last Resort Housing Program will be used (See the explanation of the Last Resort Housing Program below).

Rent Differential

Tenants and certain owner-occupants (based on length of ownership) who have occupied the property to be acquired by the agency responsible (City of Bakersfield) prior to the date of the initiation of negotiations may qualify to receive a rent differential payment. This payment is made when the agency responsible (City of Bakersfield and/or County of Kern) determines that the cost to rent a comparable “decent, safe and sanitary” replacement dwelling will be more than the present rent of the displacement dwelling. As an alternative, the tenant may qualify for a down payment benefit designed to assist in the purchase of a replacement property and the payment of certain costs incidental to the purchase, subject to certain

limitations noted under the *Down Payment* section below. The maximum amount payable to any eligible tenant and any owner-occupant of less than 180 days, in addition to moving expenses, is $5,250. If the total entitlement for rent supplement exceeds $5,250, the Last Resort Housing Program will be used.

In order to receive any relocation benefits, the displaced person must buy or rent and occupy a "decent, safe and sanitary" replacement dwelling within one year from the date the agency responsible (City of Bakersfield) takes legal possession of the property, or from the date the displacee vacates the displacement property, whichever is later.

Down Payment

The down payment option has been designed to aid owner-occupants of less than 180 days and tenants in legal occupancy prior to the initiation of negotiations by the agency responsible (City of Bakersfield and/or County of Kern). The down payment and incidental expenses cannot exceed the maximum payment of $5,250. The one-year eligibility period in which to purchase and occupy a "decent, safe and sanitary" replacement dwelling will apply.

Last Resort Housing

Federal regulations (49 *Code of Federal Regulations* 24) contain the policy and procedure for implementing the Last Resort Housing Program on federal-aid projects. Last Resort Housing benefits are, except for the amounts of payments and the methods in making them, the same as those benefits for standard residential relocation as explained above. Last Resort Housing has been designed primarily to cover situations where a displacee cannot be relocated because of lack of available comparable replacement housing, or when the anticipated replacement housing payments exceed the $22,500 and $5,250 limits of the standard relocation procedure, because either the displacee lacks the financial ability or other valid circumstances.

After the initiation of negotiations, the agency responsible (City of Bakersfield) will, within a reasonable length of time, personally contact the displacees to gather important information, including the following:

- Number of people to be displaced.
- Specific arrangements needed to accommodate any family member(s) with special needs.
- Financial ability to relocate into comparable replacement dwelling which will adequately house all members of the family.
- Preferences in area of relocation.

- Location of employment or school.

Nonresidential Relocation Assistance

The Nonresidential Relocation Assistance Program provides assistance to businesses, farms and nonprofit organizations in locating suitable replacement property, and reimbursement for certain costs involved in relocation. The Relocation Advisory Assistance Program will provide current lists of properties offered for sale or rent, suitable for a particular business's specific relocation needs. The types of payments available to eligible businesses, farms and nonprofit organizations are: searching and moving expenses, and possibly reestablishment expenses; or a fixed in lieu payment instead of any moving, searching and reestablishment expenses. The payment types can be summarized as follows:

Moving Expenses

Moving expenses may include the following actual, reasonable costs:

- The moving of inventory, machinery, equipment and similar business-related property, including: dismantling, disconnecting, crating, packing, loading, insuring, transporting, unloading, unpacking, and reconnecting of personal property. Items acquired in the Right of Way contract may not be moved under the Relocation Assistance Program. If the displacee buys an Item Pertaining to the Realty back at salvage value, the cost to move that item is borne by the displacee.
- Loss of tangible personal property provides payment for actual, direct loss of personal property that the owner is permitted not to move.
- Expenses related to searching for a new business site, up to $2,500, for reasonable expenses actually incurred.

Reestablishment Expenses

Reestablishment expenses related to the operation of the business at the new location, up to $10,000 for reasonable expenses actually incurred.

Fixed In Lieu Payment

A fixed payment in lieu of moving, searching, and reestablishment payments may be available to businesses which meet certain eligibility requirements. This payment is an amount equal to half the average annual net earnings for the last two taxable years prior to the relocation and may not be less than $1,000 nor more than $20,000.

Additional Information

Reimbursement for moving costs and replacement housing payments are not considered income for the purpose of the Internal Revenue Code of 1954, or for the purpose of determining the extent of eligibility of a displacee for assistance under the Social Security Act, or any other law, *except* for any federal law providing local "Section 8" Housing Programs.

Any person, business, farm or nonprofit organization which has been refused a relocation payment by the relocation advisor or believes that the payment(s) offered by the agency are inadequate, may appeal for a special hearing of the complaint. No legal assistance is required. Information about the appeal procedure is available from the relocation advisor.

California law allows for the payment for lost goodwill that arises from the displacement for a pubic project. A list of ineligible expenses can be obtained from Caltrans Right of Way. California's law and the federal regulations covering relocation assistance provide that no payment shall be duplicated by other payments being made by the displacing agency.

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

State of California
Department of Transportation, District 6
1352 West Olive Avenue
P.O. Box 12616
Fresno, CA 93778-2616

For more information or a brochure on the residential relocation program, please contact Chanin Selway at chanin_selway@dot.ca.gov, (661) 326-3968.

Appendix D Minimization and/or Mitigation Summary

Environmental commitments for the proposed project are described in the Avoidance, Minimization, and/or Mitigation sections in their respective environmental categories in this Initial Study/Environmental Assessment. This section summarizes these environmental commitments by impact area.

Relocation and Real Property Acquisition

The Caltrans Relocation Assistance Program will be implemented.

Utilities and Emergency Services

- All utility relocation work will be coordinated with affected utility companies. Utility users will be informed of the date and time in advance of any service disruptions.
- During the final design phase, a thorough investigation of existing utilities will be performed as well as identification of any required future utilities to determine the appropriate steps for protection-in-place, relocation, and utility openings as needed.
- Additional guidance for the avoidance of impacts to underground utilities and nearby structures will be provided in the *Geotechnical Report*, if warranted.
- A Traffic Management Plan will be developed and implemented.

Traffic and Transportation/Pedestrian and Bicycle Facilities

- A Traffic Management Plan will be prepared. The plan would include the following elements: public information/public awareness; designation of haul routes for construction-related trucks; the location of access to the construction site; driveway turn restrictions; temporary traffic control devices or flagmen; travel time restrictions for construction-related traffic to avoid peak travel periods on selected roadways; and designated parking and staging areas for workers and equipment. The plan will be provided to emergency service providers and school officials with construction plans before construction.
- The Caltrans Construction Division would be consulted to determine if a Construction Zone Enhanced Enforcement Program should be prepared and implemented during project construction. The program involves the presence at all times of the California Highway Patrol in construction zones to remind motorists to slow down and use caution

when traveling through work areas. The Caltrans Construction Division should be consulted regarding requirements for the program.

Visual/Aesthetics

- The new road extension will be designed to appear continuous with the existing roadway at the Hageman Road and Landco Drive intersection and at the Airport Drive and Golden State Avenue on- and off-ramps.
- The project will be designed in accordance with the local design context, including elements such as gray-colored asphalt and concrete similar in color, texture, and form to the existing pavement. It will also include new 12-foot-wide shoulders appropriate to the design setting.
- Highway right-of-way landscaping such as trees and other vegetation that is removed will be replaced at a rate, size, and location determined by the Caltrans District Landscape Architect. New and/or replaced irrigation systems will be placed at the direction of the Caltrans District Landscape Architect.
- Lighting will be directed away from sensitive receptors.

Cultural Resources

- Before the start of work that would affect any characteristics that qualify Historic U.S. Highway 99 as a historic property, Caltrans would ensure that the recordation measures described below are completed:
    - Caltrans shall take large-format (4-inch by 5-inch or larger negative size) photographs within the Area of Potential Effects including the existing highway segment and associated features—Largo, Gaynor, and Unnamed Cattle Passes. Photographs shall be processed for archival permanence in accordance with the Historic American Engineering Record photographic specifications. Views of the segment of the Historic U.S. Highway 99 within the Area of Potential Effects shall include: contextual views showing the highway in its setting; details of unique or representative features or detailing, including Largo, Gaynor and Unnamed Cattle Passes; overviews of the property and contributors setting and vegetation.
    - Caltrans would complete a written historic and descriptive report for the segment of Historic U.S. Highway 99 within the Area of Potential Effects, including the Largo, Gaynor and Unnamed Cattle Passes. This report would provide a physical description of the property, discuss its construction and its significance under applicable National Register of Historic Places criteria, and

address the historical context for its construction following the format and instructions in the September 1993 National Park Service *Historic American Engineering Record Guidelines for Preparing Written and Descriptive Data* guidelines for written documentation.

  - Upon completion, copies of the documentation shall be retained by Caltrans District 6 and offered to the California Office of Historic Preservation/ Southern San Joaquin Valley Information Center, the Walter Stiern Special Collections Library at California State University, Bakersfield, the Jack Maguire Local History Room at the Beale Memorial Library in Bakersfield, and the California Room of the California State Library in Sacramento.

- If cultural materials are discovered during construction, all earth-moving activity within and around the immediate discovery area would be diverted until a qualified archaeologist could assess the nature and significance of the find.
- If human remains are discovered, State Health and Safety Code Section 7050.5 states that further disturbances and activities shall cease in any area or nearby area suspected to overlie remains, and the county coroner contacted. Pursuant to Public Resources Code Section 5097.98, if the remains were thought to be Native American, the coroner would notify the Native American Heritage Commission, which would then notify the Most Likely Descendent. At this time, the person who discovered the remains would contact Caltrans District 6, Cultural Studies Environmental Branch, so that they may work with the Most Likely Descendent on the respectful treatment and disposition of the remains. Further provisions of Public Resources Code Section 5097.98 are to be followed as applicable.

Water Quality and Storm Water Runoff

- Construction of the project will comply with Central Valley Regional Water Quality Control Board policies for soil-disturbing activities.
- Section 401 Certification from the Central Valley Regional Water Quality Control Board and Section 404 (Wetland) permit authorization from the U.S. Army Corps of Engineers will be obtained.
- The project would comply with California Fish and Game Code Sections 1600-1616 and obtain the California Department of Fish and Game Code 1602 Streambed Alteration Agreement (if the California Department of Fish and Wildlife takes jurisdiction over Beardsley Canal).

- The project would use Design Pollution Prevention and Treatment best management practices in accordance with the latest version of Caltrans' *Storm Water Quality Handbook: Project Planning and Design Guide*.
- Best management practices would be provided as called for in a Storm Water Pollution Prevention Plan, in compliance with the Caltrans Statewide National Pollutant Discharge Elimination System Permit and any subsequent permit or individual permit, if required. A Notice of Intent will be submitted to the State Water Resources Control Board at least 30 days prior to the start of construction. Upon completion of work and the stabilization of all disturbed areas, a Notice of Termination will be submitted to the State Water Resources Control Board.
- In addition to using infiltration basins as Treatment best management practices, biofiltration swales/strips will be incorporated along the toe of slope where applicable.

Geology/Soils/Seismic/Topography

- Additional exploratory borings will be collected and tested to log soil conditions and develop final recommendations as part of the final *Geotechnical Design Report*, and incorporated into the project design.
- A scour analysis will be performed around the proposed bridge abutments, and recommendations incorporated into the project design.
- Additional exploratory borings will be collected and tested to log soil conditions and develop final recommendations as part of the design-level *Materials Report*, and incorporated into the project design.

Paleonotology

- A nonstandard special provision for paleontology mitigation would be included in the construction contract special provisions section to advise the construction contractor of the requirement to cooperate with the paleontological salvage.
- A qualified principal paleontologist (California-licensed professional geologist with a master's or doctoral degree in paleontology or geology familiar with paleontological procedures and techniques) would be retained to prepare a detailed Paleontological Mitigation Plan prior to the start of construction. All geologic work would be performed under the supervision of a California professional geologist.
- The qualified principal paleontologist would be present at pre-grading meetings to consult with grading and excavation contractors.

- Near the beginning of excavations, the principal paleontologist would conduct an employee environmental awareness training session for all persons involved in earth moving for the project.
- A trained paleontological monitor, under the direction of the qualified principal paleontologist, would be onsite to inspect cuts into the paleontological sensitive deposits to inspect for fossils during grading involving sensitive geologic formations.
- If fossils are discovered during construction/excavation, the qualified principal paleontologist (or paleontological monitor) would recover the fossils in a timely and safe manner. The resident engineer would be notified immediately by the paleontologist/monitor of potential fossil finds in work areas. At the direction of the resident engineer, construction work in these areas would be stopped or diverted to allow recovery of fossil remains in a timely manner. The Paleontological Mitigation Plan must specify fossil recovery methods and additional reporting protocol to be followed if fossils are discovered.
- Bulk sediment samples would be recovered from fossiliferous horizons and processed for microvertebrate remains as determined necessary by the principal paleontologist. Details regarding the method for sampling must be developed as part of the Paleontological Mitigation Plan.
- Fossil remains collected during the monitoring and salvage portion of the mitigation program would be cleaned, repaired, sorted, and cataloged as appropriate for curation and storage at an appropriate scientific institution.
- A scientific institution, such as the University of California Museum for Paleontology, should be retained to curate and store fossilized remains found in the project site. Prepared fossils, along with copies of all pertinent field notes, photos, and maps, would then be deposited in a scientific institution with the paleontological collections.
- A final report that outlines the results of the mitigation program would be completed. The principal paleontologist and California-licensed professional geologist would sign the report. A copy of the final report would be provided to Caltrans.

Hazardous Waste or Materials

- Subsurface site investigations addressing polychlorinated biphenyls from pole mounted transformers (should they be moved/relocated) would be conducted.
- Oil wells will need to be properly exposed for inspection and abandonment prior to construction per Division of Oil, Gas and Geothermal Guidelines.

- Special provisions will be included in the construction contract to minimize worker and public exposure to the potential lead hazard. Also, a site-specific health and safety plan would be developed and implemented
- Soils would require special handling and/or disposal at a Class I landfill.
- In accordance with San Joaquin Valley Air Pollution Control District Regulation IV, Rule 4002, written notification to San Joaquin Valley Air Pollution Control District is required 10 working days prior to starting any demolition activity (whether asbestos is present or not).

Wetlands and Other Waters

Caltrans would obtain the appropriate permits for work at the Beardsley Canal Lateral and implement the permit provisions during construction

Threatened and Endangered Species

- The following road undercrossing structures are proposed for installation, widening, or maintenance as part of the initial project design to minimize impacts to the San Joaquin kit fox. These structures will be reevaluated and adjusted accordingly during the final design phase for the project. To facilitate movement by kit fox, a 5-foot by 5-foot reinforced concrete box is proposed for the dual purpose of drainage and kit fox use east of the Beardsley Canal Lateral. Fencing or other features that may otherwise obstruct kit fox access to the entrances of the reinforced concrete box shall not be installed. A hinged gate with 6-inch by 6-inch grating shall be considered, and if feasible, constructed over each entrance of the reinforced concrete box to prevent predators from entering. Kit fox escape pipes are not currently recommended for installation in a dual water and kit fox culvert because of safety concerns for kit foxes during culvert cleaning or in the event of flooding.
- The project would retain an existing 10-foot by 10-foot reinforced concrete box used for vehicle traffic approximately 200 feet northwest of the Cross Valley Canal (at Station 51+50) and prevent obstruction of the reinforced concrete box by fencing or retaining walls.
- Existing kit fox movement opportunities would be retained along the San Joaquin Valley Railroad by designing the toe-of-road fill, walls, fencing, and any other permanent physical obstruction no less than 20 feet from the centerline of the San Joaquin Valley Railroad rails.
- Permeable fencing would be installed where feasible along the proposed right-of-way. The following three options are proposed as modifications to right-of-way road fencing

that may be permeable to kit fox movement: elevating the bottom of the fence 5 inches aboveground to allow unobstructed movement by kit foxes under the fence; providing ground level 8-inch by 8-inch-wide gaps no more than 100 feet apart for the length of the fence; or installing fencing with a minimum mesh size of 3.5 by 7 inches, preferably 4 by 12 inches if possible, which will allow unlimited movement by kit fox through the fence.

- Use permeable median barriers on roads at grade. Where feasible use Caltrans-designed modified median barrier type 60/S will be used. Caltrans type 60/S design has been approved by the U.S. Fish and Wildlife Service (Biological Opinion No. 81420-2009-F-0752; U.S. Fish and Wildlife Service 2009) and includes 9-inch radius openings (9-inch-high by 18-inch-wide half circle openings) spaced every 150 feet to allow passage by kit foxes. The total median barrier width proposed is 12 feet, with a 2-foot-wide barrier and 5-foot-wide inside shoulder in each direction.
- A minimum 36-inch diameter reinforced concrete box will be installed at Station 49+00. The culvert shall extend beyond retaining walls such that kit foxes may have the opportunity to pass through under the road. The culvert shall be at ground level with no down-slope.
- Drainage ditches will be no greater than 1:1 ratio and no deeper than 2.5 feet.
- Warning signs at the intersection of Knudsen Drive and Hageman Road and known kit fox movement corridors will be installed.
- Median and roadside landscaping will be planted in one of three alternative strategies: selecting plants that do not exceed 6 inches tall at maturity; maintaining vegetation height so that it does not exceed 6 inches; and/or creating gaps no less than 4 feet wide every 12 feet in areas landscaped with trees and shrubs. Median barriers that are at or greater than 10 inches in height will remain unvegetated.
- Monitor kit fox use of culverts and reinforced concrete boxes at quarterly intervals for three years following construction.
- Conduct annual monitoring of culverts and reinforced concrete boxes to verify kit fox access is not impeded by debris.
- A U.S. Fish and Wildlife Service- and California Department of Fish and Wildlife-approved biologist would conduct a survey for kit fox dens prior to ground-disturbing activities. The surveys would be conducted no less than 60 days and no less than 14 days prior to ground disturbance. If dens or potential dens are detected within the project footprint, resource agency permission will be sought to monitor and excavate dens that

would be affected by the project, and buffer dens that are near construction areas; active dens will not be excavated during the natal season (about January 1–June 14).

- Implement standardized construction and operational requirements as described in the U.S. Fish and Wildlife Service Standardized Recommendations for Protection of the San Joaquin Kit Fox Prior to and During Ground Disturbance (U.S. Fish and Wildlife Service, 2011).
- Construction activities will not be conducted at night (to the extent feasible); if work must be conducted at night for activities that involve maintenance, road closure and/or for safety reasons, noise and lighting shall be directed away from wildlife corridors. All nighttime work adjacent to potential kit fox movement areas would be coordinated with the City and a qualified biologist. Equipment maintenance, lighting, and staging would occur in designated areas outside of environmentally sensitive areas, directed away from potential movement areas for kit foxes, and limited in duration.
- Notify the Sacramento U.S. Fish and Wildlife Office and California Department of Fish and Wildlife of any accidental death or injury to a San Joaquin kit fox.
- A biologist approved by the U.S. Fish and Wildlife Service and California Department of Fish and Wildlife must conduct environmental awareness training for all construction crew members before ground-disturbing activities and monitor ground disturbance activities once daily.
- Permanent and temporary loss of kit fox habitat will be mitigated through the Metropolitan Bakersfield Habitat Conservation Plan at ratios developed during the Section 7 endangered species consultation. The Metropolitan Bakersfield Habitat Conservation Plan Trust Group provided a letter, dated December 3, 2010, in which it approved the ongoing use of the Habitat Conservation Plan for proposed compensation obligations for this and the remaining five Thomas Roads Improvement Program projects; it also permitted payment to occur after the approval of the final environmental document for each project. The permanent loss and the temporary disturbance of habitat suitable for the kit fox will be compensated for using a 3:1 compensation ratio for permanent effects and 1.1:1 compensation ratio for temporary effects through the Habitat Conservation Plan. The appropriate fee amount will be paid to the Habitat Conservation Plan Trust Group, and the Trust Group will acquire the required acreage amounts to be protected in perpetuity.
- If any previously unidentified protected species that is not addressed in the *Natural Environment Study* is found to be present, the species will be avoided and evaluated by a qualified biologist. The U.S. Fish and Wildlife Service and California Department of

Fish and Wildlife will be notified of any previously unreported protected species. Any take of protected wildlife shall be reported immediately to U.S. Fish and Wildlife Service and California Department of Fish and Wildlife.

- Caltrans is proposing to implement a Kit Fox Urban Benefit Program to compensate for cumulative impacts of the six Thomas Roads Improvements Program projects. The program was described in the City of Bakersfield and State of California (2010) report, but is currently being revised with input from U.S. Fish and Wildlife Service and Department of Fish and Wildlife. The conceptual framework for the program is described in the *Draft Thomas Roads Improvement Program Mitigation for Cumulative Effects to San Joaquin Kit Fox,* and the draft *TRIP San Joaquin Kit Fox Effects Analysis, Mitigation Strategy, and Implementation Plan* (City of Bakersfield and Caltrans 2010).
- The final approved version of the Kit Fox Urban Benefit Program will be implemented within one year of the approval of the final environmental document for the last of the six Thomas Roads Improvement Program projects. Long-term conservation assurances will also be provided for all sumps (basins) included in the Sump Habitat Program. These assurances will include the following: 1) a recorded covenant for each sump; 2) a perpetual endowment to pay for management, maintenance, and monitoring costs associated with ongoing implementation of the Kit Fox Urban Benefit Program; and 3) a long-term preservation management plan. The conceptual framework for the program is described in the *Draft Thomas Roads Improvement Program Mitigation for Cumulative Effects to San Joaquin Kit Fox,* and the draft *TRIP San Joaquin Kit Fox Effects Analysis, Mitigation Strategy, and Implementation Plan* (City of Bakersfield and Caltrans 2010).

Invasive Species

- Construction equipment will be cleaned of mud or other debris before mobilizing to the site and before leaving the site during the course of construction.
- Trucks with loads carrying vegetation will be covered, and vegetation materials removed from the site will be disposed of in accordance with applicable laws and regulations.
- Post-construction, any disturbed areas remaining as bare ground will be hydro-seeded with a Caltrans-approved seed mix.
- The use of invasive and nonnative plant species identified by the California Invasive Plant Council will be avoided. Landscape plans will be reviewed and verified by a qualified botanist to ensure that invasive species will not be used.

Construction Impacts

- Implement California Department of Transportation Standard Specification 7-1.01F, Standard Specification 10, and Standard Specification 18.
- Prepare and Implement a Dust Control Plan in compliance with San Joaquin Valley Air Pollution Control District Regulation VIII Requirements.
- Submit an air impact assessment application as required by Air Pollution Control District Rule 9510, Indirect Source Review.
- Implement measures to reduce construction-related exhaust emissions.
- Sound control shall conform to the provisions in Section 14-8.02, "Noise Control," of Caltrans' Draft 2010 Standard Specifications and Special Provisions. The specification states:
    - Do not exceed 86 A-weighted decibels at 50 feet from the job site activities from 9 p.m. to 6 a.m. Equip an internal combustion engine with the manufacturer recommended muffler. Do not operate an internal combustion engine on the job site without the appropriate muffler.
- This requirement in no way relieves the contractor from responsibility for complying with local ordinances regulating noise level.
- Pre-disturbance/preconstruction burrowing owl surveys would be done no more than 30 days prior to start of construction activities. Occupied burrows would not be disturbed during the nesting season (February 1 through August 31) unless (1) the birds have not begun egg-laying and incubation or (2) juveniles from the occupied burrows are foraging independently and are capable of independent survival. If burrowing owls are observed using burrows, refer to measures below for the next steps.
- Depending on the location of the burrowing owls, if found, full avoidance would occur where feasible. If not feasible, use the measure below.
- If burrowing owls are identified during pre-disturbance/preconstruction surveys, passive relocation by an ornithologist would be done if it is confirmed the burrowing owls are not nesting. In such cases, exclusion devices would not be placed until young have fledged and found to be no longer dependent upon the burrow. Exclusion devices would be used until all owls have left the site. If burrowing owls are found to be nesting, use the next measure.
- If burrowing owls are found to be nesting, then construction disturbance cannot occur within 300 feet of the active burrow(s).

- A minimum of 6.5 acres of foraging habitat per pair or unpaired resident burrowing owls should be acquired and permanently protected if burrowing owls are found during the pre-disturbance/preconstruction survey phase.
- Construction personnel would be trained by a qualified biologist prior to grading.
- If site grading starts during native bird species nesting/breeding season (February through September), pre-disturbance surveys would be done prior to issuance of grading permits for each phase of the project and within 30 days of ground disturbance. If ground disturbance activities are delayed, then additional pre-disturbance surveys would be done such that no more than one week would elapse between the last survey and the start of activities.
- If active nests are found, clearing and construction within 300 feet of the nest (500 feet for raptors)—or at a distance deemed sufficient by the qualified biologist—must be postponed or halted until the nest is vacated, juveniles have fledged, and there is no evidence of a subsequent attempt at nesting.
- To avoid attracting dogs, cats, and other predators of the species of concern, the project site would be kept as clean of debris as possible. All food-related trash items would be enclosed in sealed containers and regularly removed from the site.

Appendix E Special-Status Species Lists

Table E.1 Special-Status Plants and Critical Habitat Potentially Occurring or Known to Occur in the Biological Study Area

Scientific Name Common Name	Status			Habitat Requirements	Habitat Present/ Absent	Potential Onsite Occurrence
	Federal	State	CNPS			
Astragalus hornii var. hornii Horn's milk-vetch	FSC	–	List 1B.1	Meadows, seeps, playas/lake margins, and alkaline soils.	Absent	Not Expected: no suitable habitat present.
Atriplex cordulata heartscale	FSC	–	List 1B.2	Chenopod scrub, valley and foothill grassland, meadows. Alkaline flats and scaled, sandy soils.	Absent	Not Expected: no suitable habitat present.
Atriplex tularensis Bakersfield smallscale	FE	SE	List 1B.1	Alkali meadows within chenopod scrub. Historically in alkali sink scrub or with saltgrass.	Absent	Not Expected: no suitable habitat present.
Atriplex vallicola Lost Hills crownscale	FSC	–	List 1B.2	Chenopod scrub, valley foothill grassland, vernal pools/alkaline.	Absent	Not Expected: no suitable habitat present.
California macrophylla round-leaved filaree	–	–	List 1B.1	Cismontane woodlands and grasslands with clay soils.	Absent	Not Expected: no suitable habitat present.
Calochortus striatus alkali mariposa lily	–	–	List 1B.2	Chaparral, chenopod scrub, Mojavean desert scrub, meadows and seeps (alkaline, mesic)	Absent	Not Expected: no suitable habitat present.
Caulanthus californicus California jewel-flower	FE	SE	List 1B.1	Sandy soils within chenopod scrub, pinyon and juniper woodland, and grasslands.	Absent	Not Expected: no suitable habitat present.
Delphinium recurvatum recurved larkspur	FSC	–	List 1B.2	Alkaline soils in chenopod scrub, cismontane woodlands, and grasslands.	Absent	Not Expected: no suitable habitat present.
Eriastrum hooveri Hoover's woolly-star	FD	–	List 4.2	Chenopod scrub, valley and foothill grasslands, and pinyon and juniper woodlands.	Absent	Not Expected: no suitable habitat present.
Eschscholzia lemmonii ssp. Kernensis Tejon poppy	–	–	List 1B.1	Cismontane woodlands, chenopod scrubs, grasslands. Affinity for south-facing slopes with sparse herbaceous vegetation cover.	Absent	Not Expected: no suitable habitat present.
Imperata brevifolia California satintail	–	–	List 2.1	Chaparral, chenopod scrub, Mojavean desert scrub, meadows and seeps, often alkali, and riparian scrub/mesic soils.	Absent	Not Expected: no suitable habitat present.
Layia leucopappa Comanche Point layia	–	–	List 1B.1	Dry hills in white-grey clay soils, often with annual grasses within chenopod scrubs and grasslands.	Absent	Not Expected: no suitable habitat present.
Monardella linoides ssp. Oblonga Tehachapi monardella	–	–	List 1B.3	Lower montane coniferous forest, pinyon and juniper woodland, upper montane coniferous forest.	Absent	Not Expected: no suitable habitat present.
Monolopia congdonii San Joaquin woolly-threads	FE	–	List 1B.2	Chenopod scrub and sandy valley and foothill grassland.	Absent	Not Expected: no suitable habitat present.
Navarretia setiloba Piute Mountains navarretia	–	–	List 1B.1	Associated with cismontane woodlands, pinyon and juniper woodland, valley and foothill grassland, clay or gravelly loam.	Absent	Not Expected: no suitable habitat present.
Opuntia basilaris var. treasei Bakersfield cactus	FE	SE	List 1B.1	Coarse or cobbly well-drained granitic sand on bluffs, low hills, and flats within chenopod scrubs, cismontane woodlands, and grasslands.	Absent	Not Expected: no suitable habitat present.

Scientific Name Common Name	Status			Habitat Requirements	Habitat Present/ Absent	Potential Onsite Occurrence
	Federal	State	CNPS			
Pterygoneurum californicum California chalk-moss	–	–	List 1B.1	Valley and foothill grassland alkali/soil.	Absent	Not Expected: no suitable habitat present.
Stylocline citroleum oil neststraw	–	–	List 1B.1	Chenopod scrub, coastal scrub, valley and foothill grassland/clay.	Absent	Not Expected: no suitable habitat present.
Stylocline masonii Mason's neststraw	–	–	List 1B.1	Chenopod scrub, pinyon and juniper woodland / sandy.	Absent	Not Expected: no suitable habitat present.
Tortula californica California screw moss	–	–	List 1B.2	Occurs in chenopod scrub, valley and foothill grasslands, with sandy soil.	Absent	Not Expected: no suitable habitat present.

Sources: U.S. Fish and Wildlife Service (2009), California Department of Fish and Game (2009), and California Native Plant Society (2009)

Absent *No habitat for this species was observed in the BSA*
Present *General habitat is present and species may be present*
CNPS *California Native Plant Society*
FE *Federal Endangered Species*
FSC *Federal Species of Special Concern*
FD *Federal Delisted - Species will be monitored for 5 years.*
SE *California Endangered Species*
List 1B *Plants Rare and Endangered in California and elsewhere*
List 2 *Rare, Threatened, or Endangered in California, but more common elsewhere*
List 4 *Limited distribution (Watch List)*
0.1 *Seriously Endangered in California*
0.2 *Fairly Endangered in California*
– *None*

Table E.2 Listed, Proposed Animals Species, and Critical Habitat Potentially Occurring or Known to Occur in the Project Area

Scientific Name Common Name	Status		Habitat Requirements	Habitat Present/ Absent	Potential Onsite Occurrence
	Federal	State			
Invertebrates					
Branchinecta lynchi Vernal pool fairy shrimp	FT	–	Vernal pools	Absent	Not Expected: no suitable habitat present.
Danaus plexippus Monarch butterfly	–	–	Along the coast from Northern Mendocino to Baja California, Mexico. Roosts located in wind-protected tree groves with nectar and water source nearby.	Absent	Not Expected: no suitable habitat present.
Desmocerus californicus dimorphus Valley elderberry longhorn beetle	FT	–	In association with blue elderberry in Central Valley of California.	Absent	Not Expected: no suitable habitat present.
Helminthoglypta callistoderma Kern shoulderband snail	–	–	Known only from Tulare and Kern counties along the lower Kern River Canyon where is has been collected from dead vegetation at the water's edge.	Absent	Not Expected: no suitable habitat present.
Lytta moesta Moestan blister beetle	–	–	Adult meloids are often found on flowers. There is no published information on habitat or floral visitation records for Lytta moesta.	Absent	Not Expected: no suitable habitat present.
Lytta morrisoni Morrison's blister beetle	–	–	Southern Central Valley of California. Meloids are frequently encountered on flowers, and Lytta morrisoni has been recorded feeding on Gilia tricolor and Linanthus liniflorus	Absent	Not Expected: no suitable habitat present.
Fish					
Hypomesus transpacificus Delta smelt	FT	–	Estuarine waters and upstream into rivers.	Absent	Not Expected: no suitable habitat present.
Amphibians and Reptiles					
Actinemys marmorata pallid southwestern pond turtle	–	SSC	Open slow-moving water of rivers, creeks, sloughs with basking sites present.	Absent	Not Expected: no suitable habitat present.
Anniella pulchra pulchra silvery legless lizard	–	SSC	Loose soils such as sand, loam, or humus and is found is sparsely vegetated areas such as beaches, chaparral, pine-oak woodland, stream terraces and desert scrub.	Absent	Not Expected: no suitable habitat present.
Gambelia sila blunt-nosed leopard lizard	FE	SE	Inhabits sparsely vegetated alkali and desert scrub habitats in areas of low topographic relief. Preferred habitat includes semiarid grasslands, alkali flats, and washes.	Absent	Not Expected: no suitable habitat present.
Masticophis flagellum ruddocki San Joaquin whipsnake	–	SSC	Open, dry habitats with little or no tree cover. Found in valley grasslands and saltbush scrub in the San Joaquin Valley.	Absent	Not Expected: No suitable habitat present.

Scientific Name Common Name	Status		Habitat Requirements	Habitat Present/ Absent	Potential Onsite Occurrence
	Federal	State			
Phrynosoma coronatum (frontale population) Coast (California) horned lizard	–	SSC	Occurs in valley-foothill hardwood, conifer, and riparian habitats, as well as in pine-cypress, juniper, and annual grassland habitats.	Absent	Not Expected: No suitable habitat present.
Rana aurora draytonii California red-legged frog	FT	–	Inhabits quiet pools of streams, marshes, and occasionally ponds.	Absent	Not Expected: no suitable habitat present.
Spea (=Scaphiopus) hammondii western spadefoot	–	SSC	Vernal pools and other wet areas within grasslands.	Absent	Not Expected: no suitable habitat present.
Thamnophis gigas giant garter snake	FT	ST	Prefers freshwater marsh and low gradient streams. Has adapted to drainage canals and irrigation ditches. This is the most aquatic garter snake in California.	Absent	Not Expected: no suitable habitat present.
Birds					
Agelaius tricolor tri-colored blackbird	BCC	SSC	Occurs near fresh water with dense cattails, tules, or willow thickets. May forage for waste grain in agricultural areas.	Absent	Not Expected: no suitable habitat for foraging or nesting present.
Athene cunicularia western burrowing owl	BCC	SSC	Open, dry grasslands, deserts, and sometimes ruderal areas along ditch levees. Requires burrows, principally those made by California ground squirrels.	Present	Potential: No owls were observed during surveys; however, suitable habitat does exist in the BSA. California Natural Diversity Database records report known occurrence within one mile of the project site.
Buteo swainsoni Swainson's hawk	BCC	ST	Breeds in stands with few trees, in juniper-sage flats, riparian areas and in oak savannah. Requires adjacent suitable foraging areas such as grasslands, or alfalfa or grain fields supporting rodent populations.	Absent (breeding) Present (winter migrant)	Not Expected: Kern River Corridor provides some suitable nesting habitat during winter/migrant birds; however, no suitable habitat for foraging is present. Nonnative grassland is routinely disked eliminating potential habitat
Elanus leucurus white-tailed kite	–	SFP	Rolling foothills/valley margins with scattered oaks and river bottomlands or marshes next to deciduous woodland.	Present	Not Expected: however, marginally suitable habitat for foraging is present.
Empidonax traillii extimus southwestern willow flycatcher	FE	SE	Highly restricted distribution in southern California as a breeder. It occupies extensive riparian forests, wet meadows, and lower montane riparian habitats primarily below 4,000 feet.	Absent	Not Expected: no suitable habitat present.
Mammals					
Ammospermophilus nelson San Joaquin antelope squirrel	FSC	ST	Dry, sparsely vegetated loam soils. Need widely scattered shrubs, forbs, and grasses in broken terrain with gullies and washes.	Absent	Not Expected: no suitable habitat present.

Scientific Name Common Name	Status		Habitat Requirements	Habitat Present/ Absent	Potential Onsite Occurrence
	Federal	State			
Dipodomys nitratoides nitratoides Tipton kangaroo rat	FE	SE	Saltbush scrub and sink scrub communities in the Tulare Lake Basin of the southern San Joaquin Valley. Requires soft friable soils, which escape seasonal flooding where it will dig burrows in elevated soil mounds at the base of shrubs.	Absent	Not Expected: no suitable habitat present.
Eumops perotis californicus Western mastiff bat	–	SSC	Occurs in many open, semi-arid to arid habitats, including conifer and deciduous woodlands, coastal scrub, annual and perennial grasslands, palm oases, chaparral, desert scrub and urban.	Absent	Not Expected: no suitable habitat present. California Natural Diversity Database records report known occurrences within 1.2 miles east of project site.
Onychomys torridus tularensis Tulare grasshopper mouse	–	SSC	Typically inhabit arid shrubland communities in hot, arid grassland and shrubland associations. Other reported habitats are alkali sink, dominated by one or more saltbush species, iodine bush, seepweed, and pale-leaf goldenbush; mesquite associations on the Valley floor; saltbush scrub.	Absent	Not Expected: no suitable habitat present.
Sorex ornatus relictus *Buena Vista Lake shrew*	FE	SSC	Marshlands and riparian areas.	Absent	Not Expected: no suitable habitat present.
Taxidea taxus American badger	–	SSC	Herbaceous, shrub and open stages of most habitats with dry, friable soils.	Absent	Not Expected: no suitable habitat present. However, California Natural Diversity Database records show the project site is within range for this species.
Vulpes macrotis mutica San Joaquin kit fox	FE	ST	Chenopod scrub, grasslands, sometimes forages in agricultural areas.	Present	Confirmed: ESRP has reported kit foxes, including pups just south of Golden State Avenue and east of State Route 99. In addition, surveys conducted in 2008 identified five presumed active dens, seven potential dens and six incidences of kit fox sign within the kit fox study area.

Sources: U.S. Fish and Wildlife Service (2009; updated September 2011) and California Department of Fish and Game (2009)

Absent *No habitat for this species was observed in the BSA*

SFP *California Fully Protected Species*

Present *General habitat is present and species may be present*

SSC *California Department of Fish and Game*

FE *Federal Endangered Species*

Species of Special Concern

FT *Federal Threatened Species*

- *None*

SE *California Endangered Species*

ST *California Threatened Species*

List of Technical Studies Bound Separately

Caltrans, District 6, Draft Relocation Impact Memorandum, January 2010

Air Quality Study Report, Hageman Road Extension Project from Knudsen Drive to Golden State Avenue (State Route 204), January 2010

Community Impact Assessment, Hageman Road Extension Project from Knudsen Drive to Golden State Avenue (State Route 204), June 2010

Noise Study Report, Hageman Road Extension Project from Knudsen Drive to Golden State Avenue (State Route 204), February 2010

Water Quality Assessment, Hageman Road Extension Project from Knudsen Drive to Golden State Avenue (State Route 204), January 2010

Natural Environment Study, Hageman Road Extension Project from Knudsen Drive to Golden State Avenue (State Route 204), September 2011

Historical Property Survey Report, Hageman Road Extension Project from Knudsen Drive to Golden State Avenue (State Route 204), September 2011

- Historic Property Study Report, September 2011
- Historic Resource Evaluation Report, September 2011
- Archaeological Survey Report, September 2011

Hazardous Waste Reports:

- Supplemental Site Assessment Report, Hageman Road Extension, October 2011
- Initial Site Assessment, Hageman Road Extension to Golden State Avenue, January 2010
- Pesticide Assessment, Hageman Road Extension, October 2011
- Aerially Deposited Lead Assessment, Hageman Flyover Extension Project, January 2010
- Asbestos and Lead Paint Assessment, Hageman Flyover Extension Project, January 2010
- Historic Oil Well Soil Contamination Assessment, November 2011

- Preliminary Materials Report, Hageman Road Extension to Golden State Avenue, December 2009
- Preliminary Geotechnical Design Report, Hageman Road Extension to Golden State Avenue, December 2009

Visual Impact Assessment, Hageman Road Extension Project from Knudsen Drive to Golden State Avenue (State Route 204), April 2010

Traffic Report for Hageman Road Extension to Golden State Avenue, July 2009

Traffic Report Supplement for Hageman Road Extension to Golden State Avenue, January 2010

Paleontological Identification/Evaluation Report, Hageman Road Extension Project from Knudsen Drive to Golden State Avenue (State Route 204), April 2010