Measure A Sac I-5/I-80 Interchange Modification Project

SACRAMENTO COUNTY, CALIFORNIA
DISTRICT 3 – SAC – 5/80, (PM I-5: 25.2/27.8 I-80: M1.3/M3.8)
03-2C990

Draft Environmental Impact Report/ Environmental Assessment

Prepared by the
State of California Department of Transportation

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

February 2010

Caltrans

General Information About This Document

What's in this document?

The California Department of Transportation (Caltrans), as assigned by the Federal Highway Administration (FHWA), has prepared this Environmental Impact Report/Environmental Assessment (EIR/EA), which examines the potential environmental impacts of the alternatives being considered for the proposed project located in Sacramento 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 of the alternatives, and the proposed avoidance, minimization, and/or mitigation measures.

What should you do?

- Please read the document.

- Additional copies of the Draft EIR/EA and the supporting technical studies are available for review at the Caltrans District 3 office located at 2800 Gateway Oaks Drive, Sacramento, CA 95833. The Draft EIR/EA is available for review at the following locations:

Central Library 828 I Street Sacramento, CA 95814	South Natomas Library 2901 Truxel Road Sacramento, CA 95833	North Natomas Library 2500 New Market Drive Sacramento, CA 95835

- Attend the open house between 4-8 pm, **March 10, 2010** at 2800 Gateway Oaks Drive, Sacramento, CA 95833.

- We'd like to hear what you think. If you have any comments regarding the proposed project, please attend the Open House and/or send your written comments to Caltrans by April 8, 2010.

- Submit comments via postal mail to:
  Mr. Lupe Jimenez, Senior Environmental Planner, Branch S4
  California Department of Transportation
  2800 Gateway Oaks Drive
  Sacramento, CA 95833

- Submit comments via email to: lupe_jimenez@dot.ca.gov

- Be sure to submit comments by: **April 8, 2010**

What happens next?

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

For individuals with sensory disabilities, this document is available in Braille, large print, on audiocassette, or computer disk. To obtain a copy in one of these alternate formats, please call or write to Caltrans, Attn: Mr. Lupe Jimenez, Branch S4, 2800 Gateway Oaks Drive, Sacramento, CA 95833; (916) 274-0557 Voice, or use the California Relay Service TTY number, by dialing 711, or (800) 735-2929 (TTY to Voice) or (800) 735-2922 (Voice to TTY).

SCH# 2008022098
3-SAC-5 PM 25.2/27.8, SAC 80 M1.3/M3.8
03-2C990

Measure A Sac I-5/I-80 Interchange Modification Project

At the Interstate 5 (I-5) and Interstate 80 (I-80) Interchange in Sacramento County from Garden Highway to Arena Boulevard on I-5 and from West El Camino Avenue to Truxel Road on I-80.
(Postmile 25.2/27.8 on I-5 and M1.3/3.8 on MI-80)

DRAFT ENVIRONMENTAL IMPACT REPORT/ENVIRONMENTAL ASSESSMENT

Submitted Pursuant to: (State) Division 13, California Public Resources Code
(Federal) 42 USC 4332(2) C

THE STATE OF CALIFORNIA
Department of Transportation

2/3/2010
Date of Approval

Katrina C. Pierce

KATRINA C. PIERCE, Division Chief
North Region Environmental Planning
California Department of Transportation

Summary

The proposed project is a joint project by the California Department of Transportation (Caltrans) and the Federal Highway Administration (FHWA), and is subject to state and federal environmental review requirements. Project documentation, therefore, has been prepared in compliance with both the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA). Caltrans is the lead agency under CEQA. In addition, FHWA's responsibility for environmental review, consultation, and any other action required in accordance with applicable Federal laws for this project is being, or has been, carried out by Caltrans under its assumption of responsibility pursuant to 23 U.S.C. 327.

Some impacts determined to be significant under CEQA may not lead to a determination of significance under NEPA. Because NEPA is concerned with the significance of the project as a whole, it is quite often the case that a "lower level" document is prepared for NEPA. One of the most commonly seen joint document types is an Environmental Impact Report/Environmental Assessment (EIR/EA).

Following receipt of public comments on the Draft EIR/EA and circulation of the Final EIR/EA, Caltrans will be required to take actions regarding the environmental document. Caltrans will determine whether to certify the EIR and possibly issue Findings and a Statement of Overriding Considerations under CEQA and whether to issue a Finding of No Significant Impact (FONSI) or require an Environmental Impact Statement (EIS) under NEPA.

Overview of Project Area

The project limits on Interstate 5 (I-5) are from the Garden Highway southbound off-ramp to the Arena Boulevard northbound off-ramp and on I-80, from West El Camino Avenue to the Truxel Road on-ramp. The existing I-5/I-80 interchange is a freeway-to freeway interchange, constructed in 1968. Within the project limits, I-5 is an eight-lane divided freeway with auxiliary lanes to and from the adjacent interchanges. I-80 is a six-lane divided freeway within the project limits. A portion of the eastbound I-80 mainline between I-5 and the San Juan Road Overcrossing is reduced to two lanes. The portion of I-80 east of the interchange has auxiliary lanes to and from the Truxel Road interchange. The surrounding area is primarily urban. Agricultural uses take place in some isolated portions of the project study area.

Purpose and Need

The purpose of the proposed project is to:

- Provide congestion relief.
- Improve safety and interchange operations.

- Promote the use of high occupancy vehicles (HOV).
- Support the goals of the SACOG 2035 Metropolitan Transportation Plan by providing greater connectivity with the existing and proposed HOV network in the Sacramento region.

Traffic on both I-5 and I-80 has steadily increased over the last few decades. Presently, congestion is experienced during peak periods on I-5 (in both directions), as well as eastbound I-80, near the interchange. Further development along the I-5 and I-80 corridors and increasing traffic volumes will further erode operating conditions of this interchange.

I-5 plays a critical role in California's economy by supporting a high volume of commuter and interregional traffic as well as trucks moving goods to destinations in and outside the state. The I-5/I-80 interchange connects major regional routes in Northern California and must operate effectively in order to serve commuter traffic, truck traffic and regional traffic. Interstate 5 is designated as part of the "National Network" for trucks and as the primary north-south route in California serves interregional and interstate travel.

Proposed Action

Caltrans and the FHWA, in cooperation with the Sacramento Transportation Authority (STA), propose to improve the operation of the I-5/I-80 interchange with the addition of auxiliary lanes; the elimination of one loop ramp; the addition of a HOV flyover; HOV lanes on I-5; and the addition of a mixed flow flyover between I-5 and I-80.

The project limits on I-5 are from the Garden Highway southbound off-ramp to the Arena Boulevard northbound off-ramp (Postmile (PM) 25.2/27.8) and on I-80, from West El Camino Avenue to the Truxel Road eastbound on-ramp (PM 1.3/3.8). The total length of the project is 2.6 miles on I-5 and 2.5 miles on I-80 and includes a direct two-lane fly-over connector for the eastbound (EB) I-80 to northbound (NB) I-5 movement and a direct bi-directional fly-over HOV connector for the westbound (WB) I-80 to southbound (SB) I-5 and NB I-5 to EB I-80 movements. Other operational improvements include configuring the interchange for the future construction of continuous HOV lanes on I-5 from downtown Sacramento to the I-5/State Route (SR) 99 Interchange; improving the connectors in the southwest and northeast quadrants of the I-5/I-80 interchange; eliminating the lane drop on EB I-80 and providing other auxiliary lanes. The project is described in detail in Chapter 1 and Figure 1 shows the project vicinity and location maps.

Other Proposed Actions in the Project Vicinity

This section provides a summary list of transportation and other proposed actions within the immediate project vicinity. For a more comprehensive list of projects, including more detailed project descriptions for the projects listed below; please see Section 2.29 ("Cumulative Impacts") of this document.

Table 1 Current Completed (2008) and Proposed Projects Within Study Area

Project Name	Project Description	Year Completed or proposed construction
Transit Projects		
Downtown Light Rail Station Enhancements	Design and construct light rail station enhancements, including better signage, lighting, pedestrian access, and ADA access to encourage greater transit usage.	2009
Northeast Corridor Enhancements	Improve alignment of Northeast Corridor LRT, upgrade the traction power system and signaling to provide limited-stop service, make enhancements to yard track and maintenance facility, and installation of communications infrastructure.	2010
Downtown-Natomas Rail Extension-MOS-1A	This extends light rail via a single track from Downtown Sacramento to Richards Boulevard, a distance of just over 1.1 miles, but stopping short of a crossing of the American River.	2010
Downtown Sac to West Sac Streetcar	Streetcar Capital to provide starter line service	2014
DNA Light Rail – Overall Study	Provide for additional advanced planning, value engineering, project delivery strategies, advanced conceptual engineering, and update the alternatives analysis. Project includes potential hardship right-of-way acquisition activities.[Phase 1 (MOS-1A) Construction is REG17320,Phase 2 is REG17935, and Phase 3 is REG17325.]	2017
Downtown-Natomas-Airport Rail Extension-MOS2	Extend rail from Richards Boulevard to Natomas Town Center	2017
Downtown-Natomas-Airport Rail Extension-MOS3	Extend rail from Natomas Town Center to Sacramento International Airport.	2020
State and Interstate Highway Projects		
I-5	Add HOV and auxiliary lanes from Elk Grove Boulevard to downtown Sacramento	2015
I-80	New HOV lanes from RT Station (Longview) to the Yolo County line/Sacramento River (western terminus).	2015
I-5	Widen: add NB auxiliary lane from Del Paso Rd. to SR 99.	2016
I-5/I-80	Reconstruct I-5/I-80 Interchange, including high occupancy vehicle (HOV) lane connectors, and construction of HOV lanes from the I-5/I-80 Interchange to downtown Sacramento	2018
U.S. 50 HOV	HOV lanes from Watt Ave. to Downtown Sacramento.	2020
I-5	Add HOV lanes from I-80 to SR 70/SR 99. Add Bus/HOV lanes between I-80 and	2020

Project Name	Project Description	Year Completed or proposed construction
	downtown Sacramento (CAL18410).	
I-5/SR 99	I-5/SR 99 interchange	2023
U.S. 50/SR 99	Oak Park Interchange, including HOV lane connectors	2027
I-5/U.S. 50	I-5/U.S. 50 Riverfront Interchange	2029
Local Streets Projects		
Del Paso Rd.	Widen: 6 lanes from El Centro Rd. to SB I-5 offramp.	2008
Del Paso Rd.	Widen: 6 lanes from 500 feet east of Truxel Rd. to Town Center. (Complete frontage improvements and construct a raised/landscaped median).	2008
El Centro Rd.	Widen: 4 lanes from Del Paso Rd. to Arena Boulevard.	2008
El Centro Rd.	Widen: 4 lanes from Arena Boulevard to San Juan Rd.	2008
Main Ave.	Bridge Replacement: Main Ave. Bridge over Natomas east Main Drain: replace existing 2-lanebridge with a 4-lane bridge.	2008
Ninos Pkwy.	Bike trail: develop a pedestrian bike trail within the Ninos Pkwy. between San Juan Rd. and Edmonton Dr.	2008
Sacramento River Bike Trail	Bike Trail: construct from R St. to Miller Park and from Garcia Bend Park to south city limits along the east levee of the Sacramento River.	2008
I-80	Bike/pedestrian bridge: across I-80 at the West Canal, as well as across the West Canal.	2011
Metro Air Pkwy.	The County of Sacramento is planning to construct an interchange on I-5 at Metro Air Parkway, a new arterial that will serve the planned Metro Air Park development. The proposed interchange would be located about halfway between the Airport Boulevard and SR 99 interchanges.	2011
Del Paso Rd.	Widen: from I-5 NB off-ramp to East Commerce (north side only).	2016
I-5	New Bridge: Construct connection over I-5 between approximately Capitol Ave. to "O" St.	2016
Richards Boulevard	Richards Boulevard/I-5 reconstruct Interchange	2017
Sacramento River Crossing	New all-modal river crossing (Auto, Transit, Bike & Pedestrian) from Sacramento across the Sacramento River to West Sacramento. The crossing was modeled between Broadway in Sacramento & 15th Street in West Sacramento, but final alignment options will be studied in subsequent planning efforts. Additional 50% of estimated cost identified as a City of West Sacramento project.	2019
Lower American River Crossing	New all-modal river crossing (Transit, Auto, Bike & Pedestrian) across the Lower American River between downtown Sacramento and South Natomas	2019
Northgate Boulevard	Extend: Northgate Boulevard/I-80 Interchange: Extend existing I-5 WB off-ramp onto Northgate Boulevard.; add auxiliary lane to WB on-ramp	2020

Project Name	Project Description	Year Completed or proposed construction
W. El Camino Ave./I-80	West El Camino Interchange on I-80: Widen 4 lanes and modify ramps	2020
W. El Camino Ave.	West El Camino Interchange on I-5: new NB entrance ramp and SB exit ramp. Modify: NB I-5 to I-80 ramp to accommodate the proposed interchange ramps.	2030

Source: Appendix A1 and A2 from the MTP 2035, http://sacog.org/mtp/2035/finaldocs/mtp/Appendices%20A-%20Project%20Lists/Appendix%20A1%20&%20A2%2010-15-08.pdf

In addition, the following project is not included on the list above, but is in the initial stages of being studied, thus information is limited.

- 3E580K- Restripe I-5 in the "Boat Section" postmiles 22.5/23.6.

Areas of Potential Controversy

CEQA Guidelines (Section 15123) and NEPA Regulations (40 Code of Federal Regulations [CFR] 1502.12) require the Summary to identify areas of controversy known to the lead agency including issues raised by other agencies and the public.

Local environmental or community organizations have, in the past, opposed some HOV projects in the Sacramento metropolitan region, contending that HOV lanes would contribute to urban sprawl, induced travel with resultant impacts on air quality, noise or community impacts, and that the money would be better spent on transit oriented projects.

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

Table 2 summarizes the potential significant impacts (under CEQA) of the proposed project and proposed mitigation measures to reduce significant impacts. Details for each environmental category are presented in Chapter 2 (Affected Environment, Environmental Consequences, and Avoidance, Minimization and/or Mitigation Measures) of this document.

Permits and Approvals Needed

The following permits, reviews, and approvals would be required for project construction:

- California Department of Fish and Game, 2080.1 consultation under Fish and Game Code Section 2080.
- United States Army Corps of Engineers (USACE) Section 404 authorization under the Federal Clean Water Act.
- Central Valley Regional Water Quality Control Board (RWQCB) Section 401 certification.

- United States Fish and Wildlife Service (USFWS) formal consultation under Section 7 of the Federal Endangered Species Act.
- National Emissions Standards for Hazardous Air Pollutants (NESHAP) notification to the Sacramento Metropolitan Air Quality Management District for Asbestos Demolition and Renovation.

Table 2 Summary of Potential Significant Impacts (Under CEQA) and Proposed Mitigation Measures

Affected Resources	Potential Significant Impacts (Under CEQA)	Mitigation Measures	Significance After Mitigation	See Section
Threatened and Endangered Species	The project will permanently impact 1.80 acres of Giant Garter Snake *(Thamnophis gigas)* upland habitat. There will also be 3.83 acres of temporary impacts to upland habitat due to construction activities.	Compensatory mitigation shall be determined according to the "Standard Avoidance and Minimization Measures During Construction Activities in Giant Garter Snake Habitat" (USFWS 2005a). Temporary impacts are expected to last for one season and will be revegetated following the measures outlined in Section 2.26.10 Permanent impacts will be compensated for at a 3:1 ratio. A total of 5.28 acres of giant garter snake upland habitat mitigation will be required to fully compensate for project impacts. All mitigation will be completed within the Sacramento River watershed and will be approved by USFWS.	Less than significant	2.26.7
Threatened and Endangered Species	There are a total of 89.93 acres of Swainson's hawk (Buteo swainsoni) foraging habitat within the environmental study limits. The project will impact 9.85 acres of Swainson's hawk foraging habitat.	Compensatory mitigation for impacts to Swainson's hawk foraging habitat will follow the Staff Report Regarding Mitigation for Impacts to Swainson's Hawks in the Central Valley of California (DFG, 1994). As outlined, impacts to foraging habitat shall be mitigated for at a 1:1 ratio for impacts within one mile of an active nest. Impacts are currently estimated at 9.85 acres all within one mile of an active nest. Based on these amounts, 9.85 acres of Swainson's hawk foraging habitat mitigation will be needed.	Less than significant	2.26.2
Visual/ Aesthetics	Removal of vegetation	All disturbed areas will be replanted with trees, shrubs, grasses, and new irrigation will be installed. In addition, 19 acres of new trees, shrubs, and irrigation will be installed between the property line and the new auxiliary lanes to compensate for the increased hard surface.	Less than significant	2.11.4

Table 3 Summary of Potential Impacts and Avoidance and Minimization Measures

Affected Resources	Potential Impacts	Avoidance/Minimization Measures	See Section
Land Use	None	None Required	2.1.3
Growth	None	None Required	2.4.3
Community Impacts	Temporary construction-related impacts	• Preparation of a Transportation Management Plan • Avoidance and minimization measures for temporary effects to the community resulting from dust and noise are listed below under Air Quality and Noise	2.5.4
Environmental Justice	None	None Required	2.7.4
Utilities, Emergency Services, and Community Facilities	Temporary construction-related impacts	• Transportation management measures will be in place to minimize impacts on emergency services and transit operators. • All work affecting traffic lanes will be at night and off-peak hours. • Stage construction and temporary concrete barriers will be required. • Construction of viaducts and other structures will require detouring/shifting traffic around the areas under work. • A public awareness campaign, portable changeable message signs, and Construction Zone Enhanced Enforcement Program (COZEEP) will be included in the project. • Lane closure charts will be developed during the PS&E phase of the project	2.8.3
Traffic and Transportation/Pedestrian and Bicycle Facilities	Temporary construction-related impacts	• A public awareness campaign, portable changeable message signs, and Construction Zone Enhanced Enforcement Program (COZEEP) will be included in the project. • Lane closure charts will be developed during the PS&E phase of the project.	2.9.4
Visual/Aesthetic	Construction of flyover and retaining walls	The concrete retaining walls will have an aesthetic treatment to compensate for the additional height and visual impact. Integral brown color will be added to reduce glare and visual boredom. The chain link fence will have a dark coating to make it inconspicuous.	

Affected Resources	Potential Impacts	Avoidance/Minimization Measures	See Section
Cultural Resources	None	Provisions will be included in the contract specifications in the event that cultural materials are discovered during construction	2.12.3
Hydrology and Floodplains	None	The mixed-flow connector and the San Juan Road Bridge will be designed to minimize their impacts on the floodplain.	2.14.4
Water Quality and Storm Runoff	None	• The project will adhere to all applicable permit conditions • A Storm Water Pollution Prevention Plan will be implemented and will include provisions for the handling, storage, and disposal of contaminated soil and Portland Concrete Cement residues • The provisions of the Caltrans Storm Water Management Plan and the Project Planning and Design Guide will be implemented, as applicable • Treatment Best Management Practices will be considered, as applicable • A Waste Discharge Requirement will be obtained from the Central Valley Regional Water Quality Control Board (CVRWQCB), if required • The project will require a Section 401 Clean Water Certification from the CVRWQCB	2.15.4
Geology	None	• Roadways and bridges will be designed and constructed to the seismic design requirements for ground shaking specified in the Uniform Building Code for Seismic Zone 3. • A geologic and geotechnical investigation of the alignment of the build alternative and laboratory testing of the earth materials will be conducted during the final design phase. • Site-specific exploratory borings and laboratory testing during final design of any bridge structures will be conducted to delineate any potentially liquefiable materials. Potentially liquefiable materials will either be removed or engineered to reduce their liquefaction potential, or the engineering design will incorporate deep foundations that extend beyond soils with the potential for liquefaction. • Site-specific borings and testing will include identification of soils with high shrink-swell potential that could damage the roadway over time. Expansive soils will be over excavated and replaced with non-expansive fill or treated with appropriate soil amendments to reduce the potential for shrinking and swelling. • Soil and slope stability measures will prevent or reduce erosion. Erosion of soils during construction will be minimized using temporary hydro-seeding to provide a vegetation cover with straw bales, plastic sheeting slope cover, and other temporary drainage measures to prevent excessive slope runoff, as needed.	2.16.4

Affected Resources	Potential Impacts	Avoidance/Minimization Measures	See Section
Paleontology	None	• A Paleontological Evaluation Report has been prepared to identify any avoidance measures needed • A Paleontological Monitoring and Curation Report has been prepared to address any monitoring and/or curation that may be deemed appropriate in the event that paleontological resources are discovered during construction	2.17.4
Hazardous Materials	Aerially deposited lead (ADL), lead-based paint, asbestos containing materials (ACM), and yellow traffic stripe containing lead and other heavy metals such as chromium may be encountered during construction of the project. During construction, a number of materials will be used including gasoline, diesel fuel, oil, and lubricants for operation of construction equipment. Construction of all the "build" alternatives could potentially result in small fuel spills from construction or vehicles.	• During project construction activities, removing ACMs must be accomplished by an appropriately certified contractor in a way that contains, collects, and disposes of the small quantity of ACM in accordance with state and federal law. Appropriate Special Provisions for this work should be included in the project's construction contract; the Contractor is responsible to do this notification in a timely manner. • Surplus excavated soil if any, along I-80 with the exception of Truxel Road ramps, will not be disposed of outside the project limits without being sampled and tested to determine the level of ADL contamination in order to ensure that the waste soil is appropriately disposed of as a hazardous, regulated or unregulated waste, or whether the soils are suitable for reuse or disposal with no restrictions. • Caltrans will ensure that a Health and Safety Plan is implemented and addresses the potential effects of the various chemical compounds that could be encountered within the project area. The Health and Safety Plan will include evaluations of the suspected chemical hazards, including symptoms of exposure and emergency treatment, appropriate use of personal protection equipment, and air monitoring. • The Contractor shall prepare a project specific "Lead Compliance Plan" pursuant to Title 8 of the California Code of Regulations - Section 1532.1, to prevent or minimize worker exposure to lead. • Any removed yellow traffic stripe material will be tested prior to disposal at an appropriate waste facility. Appropriate Special Provisions for this work shall be included in the project's construction contract. • The routine use of hazardous materials, such as gasoline or diesel fuel for construction equipment, will be required by the project. Equipment to clean up fuel leaks and spills will be available at each project construction location. The Contractor will be required to safely store materials and immediately clean up spills if they occur.	2.18.4
Air Quality	Temporary constructed-related emissions of particulate matter and	• The Contractor shall comply with Caltrans Standard Specifications Section 14-9.01 and Section 10 of Caltrans Standard Specifications (2006). • Water or dust palliative will be applied to the site and equipment as frequently as necessary to	2.19.2

Affected Resources	Potential Impacts	Avoidance/Minimization Measures	See Section
	CO, nitrous oxides, volatile organic compounds, and toxic air contaminants	control fugitive dust emissions. • Soil binder will be spread on any unpaved roads used for construction purposes, and all project construction parking areas. • Trucks will be washed off as they leave the right of way as necessary to control fugitive dust emissions. • Construction equipment and vehicles shall be properly tuned and maintained. Low-sulfur fuel shall be used in all construction equipment as provided in California Code of Regulations Title 17, Section 93114. • Develop a dust control plan documenting sprinkling, temporary paving, speed limits, and expedited revegetation of disturbed slopes as needed to minimize construction impacts to existing communities. • Locate equipment and materials storage sites as far away from residential and park uses as practical. Keep construction areas clean and orderly. • To the extent feasible, establish ESAs for sensitive air receptors within which construction activities involving extended idling of diesel equipment would be prohibited. • Use track-out reduction measures such as gravel pads at project access points to minimize dust and mud deposits on roads affected by construction traffic. • Cover all transported loads of soils and wet materials prior to transport, or provide adequate freeboard (space from the top of the material to the top of the truck) to reduce PM10 and deposition of particulate during transportation. • Remove dust and mud that are deposited on paved, public roads due to construction activity and traffic to decrease particulate matter. • To the extent feasible, route and schedule construction traffic to reduce congestion and related air quality impacts caused by idling vehicles along local roads during peak travel times. • Install mulch or plant vegetation as soon as practical after grading to reduce windblown particulate in the area. • If NOA is found during construction, rules and regulation of the Sacramento Metropolitan Air Quality Management District regarding NOA must be adhered to when handling this material.	
Noise	Temporary construction-related noise impacts and noise levels that will approach or exceed the federal Noise Abatement	• The Contractor shall comply with all local sound control and noise level rules, regulations, and ordinances which apply to any work performed pursuant to the contracts, and that each internal combustion engine, used for any purpose on the job or related to the job, shall be equipped with a muffler of a type recommended by the manufacturer and that no internal combustion engine shall be operated on the project without a muffler	2.20.8

Affected Resources	Potential Impacts	Avoidance/Minimization Measures	See Section
	Criteria		
Wetlands and other waters	Minor temporary and permanent impacts to wetlands and other waters. (Mitigation for wetlands is required for permits, however, it is not considered a significant impact under CEQA)	• The proposed project footprint was designed to minimize the addition of paved and disturbed areas where possible. The proposed interchange modification includes flyover connectors which have a much smaller footprint than standard ramp connectors, decreasing potential impacts to wetlands. Work within bridge areas, with the exception of the San Juan Bridge, has been designed within the limits of the existing structures. • In order to avoid permanent impacts to the East Natomas DC, the replacement of the San Juan Bridge was redesigned to follow the existing alignment. This design change avoided 0.006 acres of impacts to the East Natomas DC which is classified as 'Other Waters of the US and under the jurisdiction of the USACE. • Roadside ditches that are affected by this project will be re-graded at the toe of slope of the widened structure. • Environmentally Sensitive Areas (ESAs) will be identified around Wetlands and Other Waters of the US that will not be affected by the project. ESA fencing will be installed to prevent unintentional impacts to these areas.	2.23.4
Special-Status Animal Species	Potential impacts to burrowing owls, raptors and other migratory birds	• Establish Environmentally Sensitive Areas • Containment Measures/Construction Site Best Management Practices • Restrict Timing of Woody Vegetation Removal • Nesting Bird Surveys • Pre-construction Burrowing Owl Surveys. If burrowing owls or signs of burrowing owls are detected, CDFG shall be contacted to determine the best course of action.	2.25.5 and 2.27.4
Threatened and Endangered Species	Potential impacts to Giant Garter Snake (GGS) and Swainson's hawk	• Establish Environmentally Sensitive Areas • Limit Vegetation Removal • Containment Measures/Construction Site Best Management Practices • Restore Wetland, Riparian, and Stream Habitat Disturbed by Construction • Dewatering Activities • Restrict Timing of In-Stream Activities • Restrict Timing of Woody Vegetation Removal • Nesting Bird Surveys • Pre-construction Surveys and Construction Monitoring for Swainson's Hawks • Giant Garter Snake Avoidance and Minimization Measures	2.26.5 and 2.26.10

Affected Resources	Potential Impacts	Avoidance/Minimization Measures	See Section
		• Giant Garter Snake Habitat Restoration	
Invasive Species	Potential introduction and/or spread of invasive species	• Weed Free Construction Equipment • Proper Disposal of Soil and Plant Material • Weed Free Erosion Control Treatments	2.28.4
Cumulative Impacts	None	No avoidance or minimization measures are required.	2.29.4

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List of Abbreviated Terms

AB	Assembly Bill
ACM	Asbestos Containing Materials
ADI	Area of Direct Impact
ADL	Aerially Deposited Lead
APE	Area of Potential Effects
Blueprint	Sacramento Area Council of Governments' Sacramento Region Blueprint
BMP	Best management practice
CAAQS	California Ambient Air Quality Standards
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CEQ	Council for Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CESA	California Endangered Species Act
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	Carbon monoxide
CO Protocol	Transportation Project-Level Carbon Monoxide Protocol
CRHR	California Register of Historical Resources
CWA	Clean Water Act
dB	Decibel
dBA	A-weighted decibel
DWR	California Department of Water Resources
EB	eastbound

E.O.	Executive Order
EA	Environmental Assessment
EIR	Environmental Impact Report
EIR/EA	Environmental Impact Report/Environmental Assessment
EJ	Environmental Justice
ESA	Environmentally Sensitive Area
ESL	Environmental Study Limits
FEMA	Federal Emergency Management Agency
FESA	Federal Endangered Species Act
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
FTA	Federal Transit Administration
GGS	Giant Garter Snake
GHG	Greenhouse gas
HOV	High Occupancy Vehicle
HSA	Hydrologic Sub Area
I-5	Interstate 5
I-80	Interstate 80
IC	Interchange
ISA	Initial Site Assessment
Leq(h)	The noisiest hour expressed as the energy-average of the A-weighted noise level occurring during a one-hour period
LOS	Level of service
MCE	Maximum credible earthquake
mph	Miles per hour
MSA	Metropolitan Statistical Area
MSAT	Mobile source air toxic
MTIP	Metropolitan Transportation Improvement Plan
MTP	Metropolitan Transportation Plan
NAAQS	National Ambient Air Quality Standards
NAC	Noise Abatement Criteria

NAHC	Native American Heritage Commission
NATA	National Air Toxics Assessment
NB	Northbound
NEPA	National Environmental Policy Act
NO_2	Nitrogen dioxide
NOA	Naturally occurring asbestos
NOC	Notice of Construction
Noise Protocol	Caltrans Traffic Noise Analysis Protocol (August 2006)
NOP	Notice of Preparation
NOX	Nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
O3	Ozone
OC	Overcrossing
PA	Programmatic Agreement
Pb	Lead
PDT	Project Development Team
PG&E	Pacific Gas and Electric Company
PM	Post Mile
PM10	Particulate Matter 10 micrometers in diameter or smaller
PM2.5	Particulate Matter 2.5 micrometers in diameter or smaller
POC	Pedestrian Overcrossing
ppm	Parts per million
PRC	California Public Resources Code
PSR	Project Study Report
RCRA	Resource Conservation and Recovery Act
ROG	Reactive Organic Gases
RT	Sacramento Regional Transit District
RTIP	Regional Transportation Improvement Plan
RTP	Regional Transportation Plan

RW	Right-of-way
RWQCB	Regional Water Quality Control Board
SACOG	Sacramento Area Council of Governments
SB	Southbound
SIP	State Implementation Plan
SMAQMD	Sacramento Metropolitan Air Quality Management District
SO2	Sulfur dioxide
SR	State Route
STA	Sacramento Transit Authority
STIP	State Transportation Improvement Program
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TDM	Transportation Demand Management
TMDL	Total Maximum Daily Load
TeNS	Technical Noise Supplement (Caltrans 1998b)
TMP	Transportation Management Plan
TOS	Traffic Operations Systems
TSM	Transportation System Management
US 50	United States 50
USACE	United States Army Corps of Engineers
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
VIA	Visual Impact Assessment
VMT	Vehicle Miles of Travel
VOC	Volatile Organic Compounds
vph	Vehicles per hour
WB	Westbound

Figure 1 Project Location

INDEX OF SHEETS

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PROJECT PLANS FOR CONSTRUCTION ON

STATE HIGHWAY
IN SACRAMENTO COUNTY
IN SACRAMENTO ON
ROUTE 5 FROM 0.2 MILE SOUTH OF GARDEN HWY OVERCROSSING
TO 0.2 mi SOUTH OF ARENA BLVD OVERCROSSING
AND ON ROUTE 80 FROM WEST EL CAMINO OVERCROSSING
TO 0.2 mi EAST OF TRUXEL RD OVERCROSSING
03-SAC-5 PM 25.2/27.8
03-SAC-80 PM M1.3/M3.8

To be supplemented by Standard Plans dated May, 2006

DIST	COUNTY	ROUTE	TOTAL PROJECT	SHEET	TOTAL SHEETS
03	Sac	5/80	25.2/27.8 M1.3/M3.8		

LOCATION MAP

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

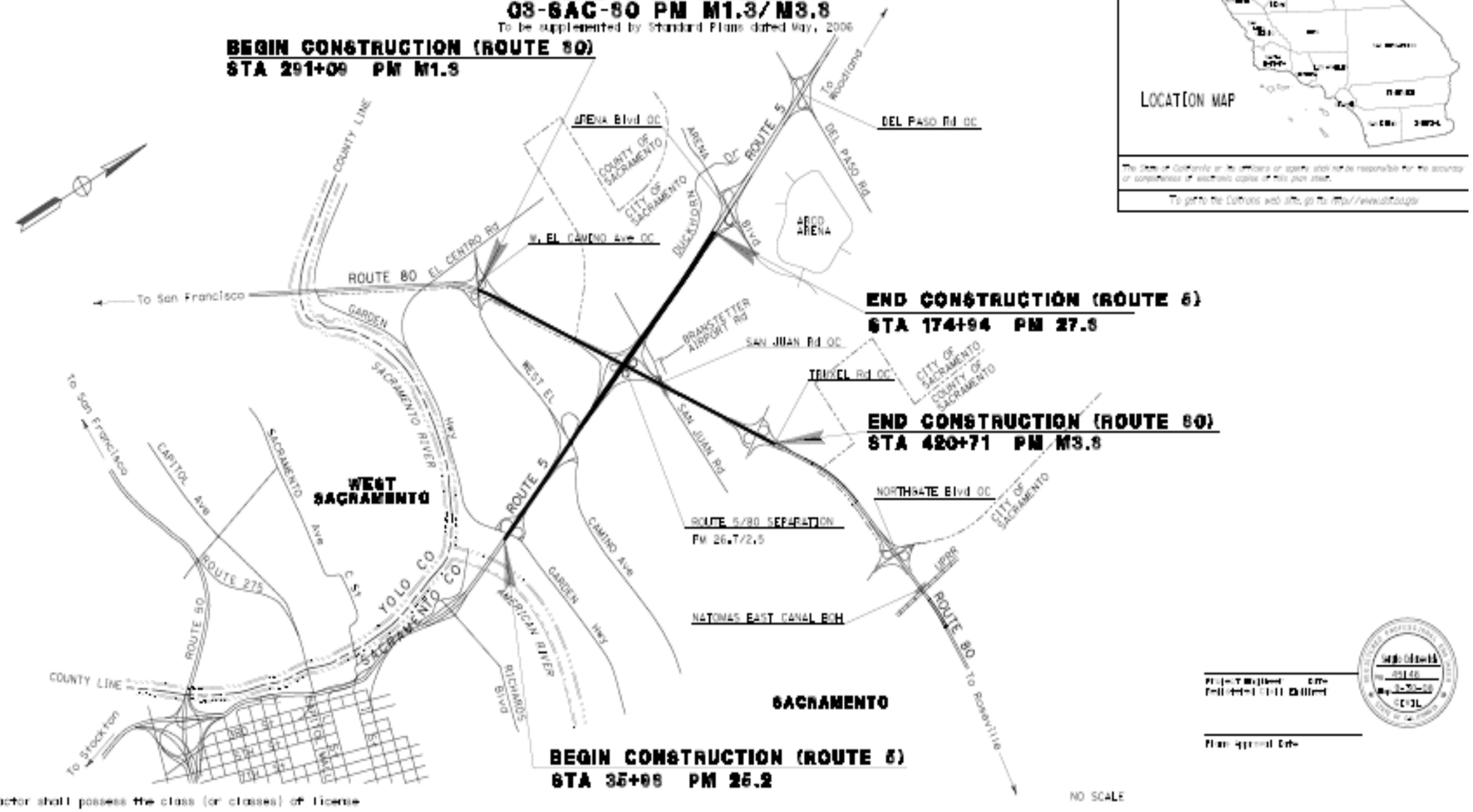
To get to the Caltrans web site, go to: http://www.dot.ca.gov

BEGIN CONSTRUCTION (ROUTE 80)
STA 291+09 PM M1.3

END CONSTRUCTION (ROUTE 5)
STA 174+94 PM 27.8

END CONSTRUCTION (ROUTE 80)
STA 420+71 PM M3.8

BEGIN CONSTRUCTION (ROUTE 5)
STA 35+98 PM 25.2



The Contractor shall possess the class (or classes) of license

Chapter 1 Proposed Project

1.1 Introduction

The California Department of Transportation (Caltrans) proposes to improve the operation of the Interstate 5 (I-5)/Interstate 80 (I-80) interchange and provide a connection to the proposed High Occupancy Vehicle (HOV) lanes between southbound I-5 and eastbound I-80. The project limits on I-5 are from the Garden Highway off-ramp to the Arena Boulevard off-ramp (PM 25.2/27.8) and on I-80 from West El Camino Avenue to the Truxel Road on-ramp (PM M1.3/M3.8). The total length of the project is 2.6 miles on I-5 and 2.5 miles on I-80 and includes a direct two-lane fly-over connector for the eastbound (EB) I-80 to northbound (NB) I-5 movement and a direct bi-directional fly-over HOV connector for the westbound (WB) I-80 to southbound (SB) I-5 and NB I-5 to EB I-80 movements. Other operational improvements include configuring the interchange for the future construction of continuous HOV lanes on I-5 from downtown Sacramento to the I-5/State Route (SR) 99 interchange, improving the loop connectors in the southwest and northeast quadrants of the I-5/I-80 interchange, eliminating the lane drop on EB I-80 and providing other auxiliary lanes. The project is described in detail below. Figure 1 shows the project location and Figures 2-4 show the project layout.

1.2 Scope of this Environmental Impact Report/Environmental Assessment

This document contains environmental analyses pertaining to the Measure A I-5/I-80 Interchange Modification located at the interchange of I-5 and I-80 in Sacramento County, California. This document satisfies requirements of the California Environmental Quality Act (CEQA) and the National Environmental Policy Act (NEPA).

This Draft Environmental Impact Report/Environmental Assessment (EIR/EA) is an informational document that: 1) informs the public agency decision-makers and the public of the environmental effects of the proposed project; and 2) identifies potential mitigation measures to minimize any adverse impacts.

A Notice of Preparation (NOP) to prepare an EIR was released February 20, 2008 and a public notice was published in the Sacramento Bee on March 10, 2008. Two agencies, the California Department of Water Resources, Floodplain Protection Section and the Sacramento Fire Department responded to the notice. (See Chapter 4, Section 4.4 for more information)

Opportunities for public comment on the Draft EIR/EA will occur during the 45-day public availability period and at the public meetings/open houses that Caltrans will hold on this document. The Final EIR/EA will take into account comments received on the Draft EIR/EA during the 45-day comment period.

1.3 Purpose and Need

Traffic on both I-5 and I-80 has steadily increased over the last few decades. Presently, congestion is experienced during peak periods on northbound and southbound I-5 and eastbound I-80, near the I-5/I-80 interchange. Commercial and residential development along the I-5 and I-80 corridors and increasing traffic volumes will further erode operating conditions of this interchange. The purpose of the proposed project is to:

- Provide congestion relief.
- Improve safety and interchange operations.
- Promote the use of high occupancy vehicles (HOV).
- Support the goals of the SACOG 2035 Metropolitan Transportation Plan by providing greater connectivity with the existing and proposed HOV network in the Sacramento region.

The proposed project, partially funded with Sacramento County Measure A funds, is located at the interchange of I-5 and I-80 within the Sacramento city limits in Sacramento County. In 2004, Sacramento County voters approved the extension of the Measure A Transportation Sales Tax program. This half-cent-per dollar sales tax measure will continue from April 2009 to March 2039 and will provide a local funding source for state highway, bridge, and other transportation improvements. The Sacramento Transportation Authority (STA) adopted the sales tax ordinance (STA 04-01) on July 29, 2004. The "I-5/I-80 Interchange Upgrade & Carpool Lane Connector" project was included in STA's Freeway Safety and Congestion Relief Program.

The need for operational improvements to this interchange was identified in the Sacramento Area Council of Governments (SACOG) High Occupancy Vehicle Planning Study for the Sacramento Metropolitan Area. SACOG completed the Major Investment Study (MIS) in 1997, which included this project. This proposed project is included in the Metropolitan Transportation Plan (MTP) 2035 (March 2008) and the 2009/2012 cost-constrained Metropolitan Transportation Improvement Program (MTIP) (August 2008).

1.3.1 Existing Conditions

The I-5/I-80 interchange is an important freeway-to-freeway interchange constructed in 1968 that serves primarily commuter traffic on weekdays and recreational travel to Lake Tahoe and

Reno, Nevada, and the San Francisco Bay area on weekends. In addition, the interchange also accommodates high volumes of long-distance interstate truck traffic.

Within the study limits, I-5 is an eight-lane divided freeway, with auxiliary lanes to and from the approaches to the interchange.

I-80 is a six-lane divided freeway within the project limits. A portion of the eastbound mainline between I-5 and San Juan Road Overcrossing contains two lanes. The portion of I-80 east of the interchange contains auxiliary lanes to and from the approaches to the interchange.

The project study area is within a heavily urbanized area, with numerous interchanges on both highways.

1.3.2 Operational Deficiencies

The I-5/I-80 interchange presently experiences delays caused by the short weaving distances between the on and off-ramps and the connector ramps. Bottlenecks occurring downstream from the interchange during the morning commute from WB I-80 to SB I-5 and the evening commute from NB I-5 to EB I-80 back up and create congestion within the interchange. It is anticipated that congestion and delays will increase due to the anticipated regional and interregional growth of the surrounding areas.

1.3.3 High Occupancy Vehicles (HOV) Lanes

HOV lanes can promote the movement of more people in fewer vehicles (carpools, vanpools, transit) by:

- Increasing the overall person-moving capacity of a roadway.
- Maintaining free-flow speeds and providing a more dependable, predictable commute compared to the mixed-flow lanes, which typically operate under congested conditions.
- Carrying 2-3 times the passenger volume as mixed-flow lanes.
- Operating during the peak commute times (requiring 2 or more people) between 6 to 10 AM and 3 to 7 PM Monday through Friday.

The proposed project is an important part of the larger existing and planned HOV network in the Sacramento region. The proposed project is a continuation of the existing HOV lanes that currently extend from Watt Avenue to the Sacramento/Placer County line. By 2012, these lanes are planned to extend to SR 65 in Roseville, creating over 22 miles of HOV lanes along I-80 and serving both Sacramento and Placer Counties.

HOV lanes are incorporated in regional transportation plans, including the 2009/2012 Metropolitan Transportation Implementation Plan (MTIP), the Metropolitan Transportation Plan (MTP) 2035, Measure A funding, and the Sacramento Regional Blueprint. The I-5/I-80 HOV lane project is included in each of these plans.

1.3.4 Safety

Table 4 summarizes the traffic accident data compiled by Caltrans' Traffic Accident Surveillance and Analysis System (TASAS) for the mainline freeway sections adjacent to the I-5/I-80 interchange. The data shown is for the three-year period between April 2004 and March 2007.

Within the study area, 536 accidents occurred on the freeway mainline section in the three-year period. Of the four mainline sections, eastbound I-80 is the only one that has a higher than average accident rate. Most collisions involved vehicles, proceeding straight, stopped or slowing, and most occurred in the left lane. This reflects the congestion that occurs during the afternoon commute due to the Northgate Boulevard bottleneck and resulting queue that extends to the I-5 interchange.

All four fatality-related accidents were located on southbound I-5 between West El Camino Avenue and the American River Bridge. Three of the four fatality accidents were alcohol-related, and two of these three involved pedestrians. All fatalities occurred outside of the AM and PM peak periods.

Because I-5 and I-80 are major interstate truck routes, the accident rate according to vehicle type was reviewed. Collisions involving trucks with three or more axles were 15 percent of all accidents on southbound I-5, 22 percent on northbound I-5, and 16 percent on I-80. The percentages of trucks involved in accidents are consistent with the percentage of trucks in the traffic volume.

Table 4 Mainline Accident History

Mainline Freeway Section	Total Accidents	Total Fatalities	Actual Accident Rate[1]			Average Accident Rate[1]		
			F	F&I	Total	F	F&I	Total
Northbound I-5 American River Br to Arena	115	0	0	0.16	0.42	0.005	0.31	0.98
Southbound I-5 Arena Boulevard to American River Br	174	4	**0.014**	0.24	0.63	0.005	0.31	0.98
Eastbound I-80 W El Camino Ave to Truxel	176	0	0	**0.40**	**1.24**	0.007	0.28	0.86
Westbound I-80	71	0	0	0.24	0.50	0.007	0.28	0.86

Truxel Rd to W El Camino								

Bold font indicate actual accident rates that are higher than the statewide average for similar facilities.
[1] The accident rate is measured in accidents per million vehicle-miles. "F" refers to the fatality rate, and "F&I" refers to the fatality and injury rate.

All three loop ramps have higher than average accident rates, both for the "fatality and injury" and total accident rates; however, none of the loop ramps had fatality-related accidents. The three other ramp segments that had higher than average accident rates also have the highest volumes: two of these segments are on the westbound to southbound connector, and the other is on the northbound to eastbound connector. In the three-year period, 110 accidents occurred on the I-5/I-80 interchange ramps. Five accidents involved fatalities, and of these five, three were alcohol-related. None of the fatalities occurred during the AM or PM peak periods.

Table 5 categorizes the ramp accidents within the three-year period according to peak period and accident type. For the ramps, the majority of accidents (55 percent) occurred outside of the peak periods. Unlike the mainline section, the highest accident type for the ramps was "hit object," which includes objects such as curbs, dikes and guardrails, and other vehicles. The percent of overturns was 20 percent.

Table 5 Ramp Accidents by Peak Period and Accident Type

Ramp Segment	Peak Period			Accident Type					Total
	6 to 10 AM	3 to 7 PM	Off-peak	Rear End	Hit Object	Sideswipe	Overturn	Other[1]	
SB I-5 Off	2	0	0	1	1	0	0	0	2
WB I-80 Off	2	9	12	7	8	3	4	1	23
WB I-80 On	0	0	2	0	1	0	0	1	2
EB I-80 Off	0	0	0	0	0	0	0	0	0
EB I-80 Off	0	0	0	0	0	0	0	0	0
EB I-80 On	2	5	6	2	6	0	4	1	13
SB I-5 On	1	1	1	1	1	0	1	0	3
NB I-5 Off	1	0	1	0	1	1	0	0	2
EB I-80 Off	2	3	7	1	4	2	4	1	12
EB I-80 On	1	7	11	4	9	3	2	1	19
WB I-80 Off	5	1	8	3	8	1	2	0	14
WB I-80 On	3	2	7	1	5	2	4	0	12
WB I-80 Off	0	1	2	0	3	0	0	0	3
NB I-5 On	1	1	3	1	2	0	1	1	5
Total	20	30	60	21	49	12	22	6	110
Percentage	18%	27%	55%	19%	45%	11%	20%	5%	100%

[1.] The "Other" category includes head-on, broadside and other accident types.

The 28 truck-related accidents made up 25 percent of all ramp accidents. Since trucks make up 15 to 20 percent of the traffic volume on the freeway, they are involved in a disproportionately high number of accidents at the interchange.

1.3.5 Additional Considerations

Although the proposed build alternatives would provide additional capacity, the following bottlenecks would exist under design-year conditions both within and adjacent to the study area. Under 2040 modeled conditions, bottlenecks are projected to occur on southbound I-5 at the American River resulting in congestion that extends to Metro Air Parkway on I-5 and Truxel Road on westbound I-80. The southbound on-ramp from SR 99 also bottlenecks in 2040, preventing traffic from reaching I-5. During the PM peak hour, northbound I-5 will have a bottleneck at SR 99 that extends to downtown Sacramento on I-5 and the Sacramento River on eastbound I-80. The Sacramento River Bridge also constrains traffic from entering the study area on eastbound I-80. There is a proposal included in the Metropolitan Transportation Plan (MTP) to provide an all modal river crossing near Truxel, which could relieve some of the congestion on I-5 at the American River Bridge.

1.4 Other Planned Projects

The following projects are planned for the study area. The list below was pulled from the Draft Final MTP 2035 Public Transit Including Rail Projects.

Table 6 Planned Transportation Projects within the Study Area

Project Name	Project Description	Year Completed or proposed construction
Transit Projects		
Downtown Light Rail Station Enhancements	Design and construct light rail station enhancements, including better signage, lighting, pedestrian access, and ADA access to encourage greater transit usage.	2009
Northeast Corridor Enhancements	Improve alignment of Northeast Corridor LRT, upgrade the traction power system and signaling to provide limited-stop service, make enhancements to yard track and maintenance facility, and installation of communications infrastructure.	2010
Downtown-Natomas Rail Extension-MOS-1A	This extends light rail via a single track from Downtown Sacramento to Richards Boulevard, a distance of just over 1.1 miles, but stopping short of a crossing of the American River.	2010

Project Name	Project Description	Year Completed or proposed construction
Downtown Sac to West Sac Streetcar	Streetcar Capital to provide starter line service	2014
DNA Light Rail – Overall Study	Provide for additional advanced planning, value engineering, project delivery strategies, advanced conceptual engineering, and update the alternatives analysis. Project includes potential hardship right-of-way acquisition activities.[Phase 1 (MOS-1A) Construction is REG17320,Phase 2 is REG17935, and Phase 3 is REG17325.]	2017
Downtown-Natomas-Airport Rail Extension-MOS2	Extend rail from Richards Boulevard to Natomas Town Center	2017
Downtown-Natomas-Airport Rail Extension-MOS3	Extend rail from Natomas Town Center to Sacramento International Airport.	2020
State and Interstate Highway Projects		
I-5	Add HOV and auxiliary lanes from Elk Grove Boulevard to downtown Sacramento	2015
I-80	New HOV lanes from RT Station (Longview) to the Yolo County line/Sacramento River (western terminus).	2015
I-5	Widen: add NB auxiliary lane from Del Paso Rd. to SR 99.	2016
I-5/I-80	Reconstruct I-5/I-80 Interchange, including high occupancy vehicle (HOV) lane connectors, and construction of HOV lanes from the I-5/I-80 Interchange to downtown Sacramento	2018
U.S. 50 HOV	HOV lanes from Watt Ave. to Downtown Sacramento.	2020
I-5	Add HOV lanes from I-80 to SR 70/SR 99. Add Bus/HOV lanes between I-80 and downtown Sacramento (CAL18410).	2020
I-5/SR 99	I-5/SR 99 interchange	2023
U.S. 50/SR 99	Oak Park Interchange, including HOV lane connectors	2027
I-5/U.S. 50	I-5/U.S. 50 Riverfront Interchange	2029
Local Streets Projects		
Del Paso Rd.	Widen: 6 lanes from El Centro Rd. to SB I-5 offramp.	2008
Del Paso Rd.	Widen: 6 lanes from 500 feet east of Truxel Rd. to Town Center. (Complete frontage improvements and construct a raised/landscaped median).	2008
El Centro Rd.	Widen: 4 lanes from Del Paso Rd. to Arena Boulevard.	2008
El Centro Rd.	Widen: 4 lanes from Arena Boulevard to San Juan Rd.	2008
Main Ave.	Bridge Replacement: Main Ave. Bridge over Natomas east Main Drain: replace	2008

Project Name	Project Description	Year Completed or proposed construction
	existing 2-lanebridge with a 4-lane bridge.	
Ninos Pkwy.	Bike trail: develop a pedestrian bike trail within the Ninos Pkwy. between San Juan Rd. and Edmonton Dr.	2008
Sacramento River Bike Trail	Bike Trail: construct from R St. to Miller Park and from Garcia Bend Park to south city limits along the east levee of the Sacramento River.	2008
I-80	Bike/pedestrian bridge: across I-80 at the West Canal, as well as across the West Canal.	2011
Metro Air Pkwy.	The County of Sacramento is planning to construct an interchange on I-5 at Metro Air Parkway, a new arterial that will serve the planned Metro Air Park development. The proposed interchange would be located about halfway between the Airport Boulevard and SR 99 interchanges.	2011
Del Paso Rd.	Widen: from I-5 NB off-ramp to East Commerce (north side only) .	2016
I-5	New Bridge: Construct connection over I-5 between approximately Capitol Ave. to "O" St.	2016
Richards Boulevard	Richards Boulevard/I-5 reconstruct Interchange	2017
Sacramento River Crossing	New all-modal river crossing (Auto, Transit, Bike & Pedestrian) from Sacramento across the Sacramento River to West Sacramento. The crossing was modeled between Broadway in Sacramento & 15th Street in West Sacramento, but final alignment options will be studied in subsequent planning efforts. Additional 50% of estimated cost identified as a City of West Sacramento project.	2019
Lower American River Crossing	New all-modal river crossing (Transit, Auto, Bike & Pedestrian) across the Lower American River between downtown Sacramento and South Natomas	2019
Northgate Boulevard	Extend: Northgate Boulevard/I-80 Interchange: Extend existing I-5 WB off-ramp onto Northgate Boulevard.; add auxiliary lane to WB on-ramp	2020
W. El Camino Ave./I-80	West El Camino Interchange on I-80: Widen 4 lanes and modify ramps	2020
W. El Camino Ave.	West El Camino Interchange on I-5: new NB entrance ramp and SB exit ramp. Modify: NB I-5 to I-80 ramp to accommodate the proposed interchange ramps.	2030

1.5 Project Development and Project Scoping History

Studies for this project began in 2002. The initial emphasis was on analyzing ramps and fly-overs for all freeway-to-freeway connections, including HOV connectors in all four quadrants of the interchange. In addition, it was proposed to analyze the extension of the southern limit to north of J Street for the purpose of providing HOV lanes from the interchange to downtown Sacramento. Due to budget constraints, the scope was later reduced to include just a mixed flow fly-over connector from EB I-80 to NB I-5, a HOV fly-over from WB I-80 to SB I-5 and NB I-5 to EB I-80, and provide HOV lanes on I-5.

Coordination with the City of Sacramento began with a scoping meeting in April 2006 with a follow up meeting in June 2006. The Federal Highway Administration (FHWA) was consulted in March of 2006 with a follow up meeting for project presentation in August 2006, and a subsequent meeting on December 20, 2007 where the revised scope was presented.

A Traffic Operational Study was completed in July 18, 2008. The study limits were from Airport Boulevard to Richards Boulevard on I-5 and from the Sacramento River to Norwood Avenue on I-80. The Study recommended redesigning or improving the existing loop connectors, and verified the need for direct HOV connectors for the WB I-80 to SB I-5 and NB I-5 to EB I-80 movements.

There are currently several projects under development to provide a network of HOV lanes throughout the Sacramento commuting area. EA 03-37970, currently under development, proposes to construct HOV lanes on I-80 from West El Camino Avenue to the Longview Drive interchange. EA 03-4E330 proposes to construct HOV lanes from the I-5/I-80 Interchange to the I-5/SR 99 interchange and EA 03-3E580 proposes to restripe the "Boat Section" downtown between the Q Street off-ramp to the Richards Boulevard off-ramp, adding an HOV lane. Those three projects together with this project will provide HOV lanes from Downtown Sacramento to the I-5/SR 99 interchange and possibly continue on SR 99 and are projected to be constructed by 2025. In addition, 03-0F410 proposes to reconfigure the I-5/SR 99 interchange to provide for HOV lanes and 03-3c000 from downtown to Elk Grove proposes HOV lanes.

The project has been included in various studies, plans, and programs since 1988 including:

- The National Strategic Transportation Study (U.S. Department of Transportation) 1988 study that recommended widening I-80 with HOV lanes between I-5 and the City of Roseville.
- Corridor System Management Plan, May 2009.
- 2003 Traffic Operational Study Report recommending bi-directional HOV connection for WB I-80 to SB-5 and NB I-5 to EB I-80.
- Sacramento Transportation Authority (STA) Congestion Management Program: The Program has recommended HOV lanes between I-5 and the Placer County line since 1991.
- Sacramento County Strategic Plan: The Plan has listed HOV lanes between I-5 and the Placer County line since 1994.
- Metropolitan Transportation Improvement Program (MTIP): The program includes a listing of all transportation-related projects requiring federal funding or other approval by the federal transportation agencies. (2009/2012) The current SACOG MTIP includes the

proposed project. Projects included in the MTIP are consistent with SACOG's Metropolitan MTP and are part of the area's overall strategy for providing mobility, congestion relief, and reduction of transportation-related air pollution in support of efforts to attain federal air quality standards for the region.

- Metropolitan Transportation Plan (MTP): The MTP is a 28-year plan for transportation improvements in a six-county region (El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba). The project is included in the MTP 2035, which has been adopted by SACOG.

- Measure A Half-Cent Sales Tax, Sacramento County 2004. The Measure A Half-Cent sales tax extended an existing half-cent from 2009 to 2030.

- The HOV project was listed under Freeway Safety and Congestion Relief Program, Regional HOV Lane Connectors/Extensions in the 2004 election ballot. All projects included on the ballot are also included in the 2035 MTP.

- Sacramento Region Blueprint. Joint effort of SACOG and Valley Vision. SACOG conducted two years of study and public involvement, resulting in the adoption the Blueprint's Preferred Blueprint Scenario in December 2004. The Blueprint scenario adopted became part of SACOG's Metropolitan Transportation Plan update for 2035, a formal document that serves as a long-range transportation plan for the six-county region. It also will serve as a framework to guide local government in growth and transportation planning through 2050.

- California Transportation Plan 2030: The California Transportation Plan 2030 is a blueprint for meeting the State's future transportation needs. Specific policies and strategies include completing the HOV network and maximizing the use of HOV lanes by encouraging transit operators to provide express bus service on HOV lanes.

- Proposition 1B, California State Propositions 2006. The proposition directed the State of California to sell $19.9 billion in general obligation bonds to fund state and local transportation and safety projects, including completing the state's network of carpool lanes. The proposed project was one of the projects listed as part of the proposition.

Figure 2 Alternative 1A

ALTERNATIVE 1A

IMPROVES TRAFFIC OPERATION AT I-5/I-80 INTERCHANGE

1. REPLACES THE SOUTH-EAST LOOP WITH A DIRECT CONNECTOR FROM EASTBOUND (EB) I-80 TO NORTHBOUND (NB) I-5
2. REPLACES SAN JUAN ROAD OVERCROSSING
3. MODIFIES EB I-80 TO SB I-5 CONNECTOR

CONSTRUCTS BUS/CARPOOL LANES

4. ADDS ONE DIRECT CONNECTOR FOR THE BUS/CARPOOL LANE MOVEMENTS NB I-5 TO EB I-80 AND WB I-80 TO SB I-5
5. ADDS ONE BUS/CARPOOL LANE ON SB I-5 WITHIN THE PROJECT LIMITS

ADDS OR EXTENDS AUXILIARY LANES

6. FROM THE NB I-5 TO EB I-80 CONNECTOR TO TRUXEL ROAD, WHICH IN TURN CONNECTS TO THE EXISTING EB AUXILIARY LANE TO NORTHGATE BOULEVARD
7. EB I-80 FROM THE WEST EL CAMINO ON-RAMP TO THE NB I-5 CONNECTOR
8. SB I-5 OFF-RAMP TO GARDEN HIGHWAY
9. SB I-5 FROM THE ARENA BLVD INTERCHANGE TO THE I-5/I-80 INTERCHANGE
10. SB I-5 TO WB I-80 CONNECTOR
11. SB I-5 TO EB I-80 LOOP CONNECTOR (2 LANES)

FIGURE ___
Alternative 1A

03-Sac-5/80
Measure A I-5 / I-80
Interchange Modification Project
PM 2.3 - 2.7 (I-5), PM 1.3 - 3.8 (I-80)
EA 03-2C090

State of California
Department of Transportation

Caltrans

November 2009

Figure 3 Alternative 1B

ALTERNATIVE 1b
(EXCEPTIONS TO 1A NOTED IN RED)

IMPROVES TRAFFIC OPERATION AT I-s5-80 INTERCHANGE

1. REPLACES THE SOUTH-EAST LOOP WITH A DIRECT CONNECTOR FROM EASTBOUND (EB) I-80 TO NORTHBOUND (NB) I-5
2. REPLACES SAN JUAN ROAD OVERCROSSING
3. MODIFIES EB I-80 TO SB I-5 CONNECTOR

CONSTRUCTS BUS/CARPOOL LANES

4. ADDS ONE DIRECT CONNECTOR FOR THE BUS/CARPOOL LANE MOVEMENTS NB I-5 TO EB I-80 AND WB I-80 TO SB I-5
5. EXCEPT THAT IT WOULD NOT INCLUDE BUS/CARPOOL LANES IN THE SB DIRECTION OF I-5

ADDS OR EXTENDS AUXILIARY LANES

6. FROM THE NB I-5 TO EB I-80 CONNECTOR TO TRUXEL ROAD, WHICH IN TURN CONNECTS TO THE EXISTING EB AUXILIARY LANE TO NORTHGATE BOULEVARD
7. EB I-80 FROM THE WEST EL CAMINO ON-RAMP TO THE NB I-5 CONNECTOR
8. SB I-5 OFF-RAMP TO GARDEN HIGHWAY
9. SB I-5 TO WB I-80 CONNECTOR (2 LANES)
10. SB I-5 FROM THE ARENA BLVD INTERCHANGE TO THE I-5/I-80 INTERCHANGE
11. SB I-5 TO EB I-80 LOOP CONNECTOR (ONE LANE ONLY)

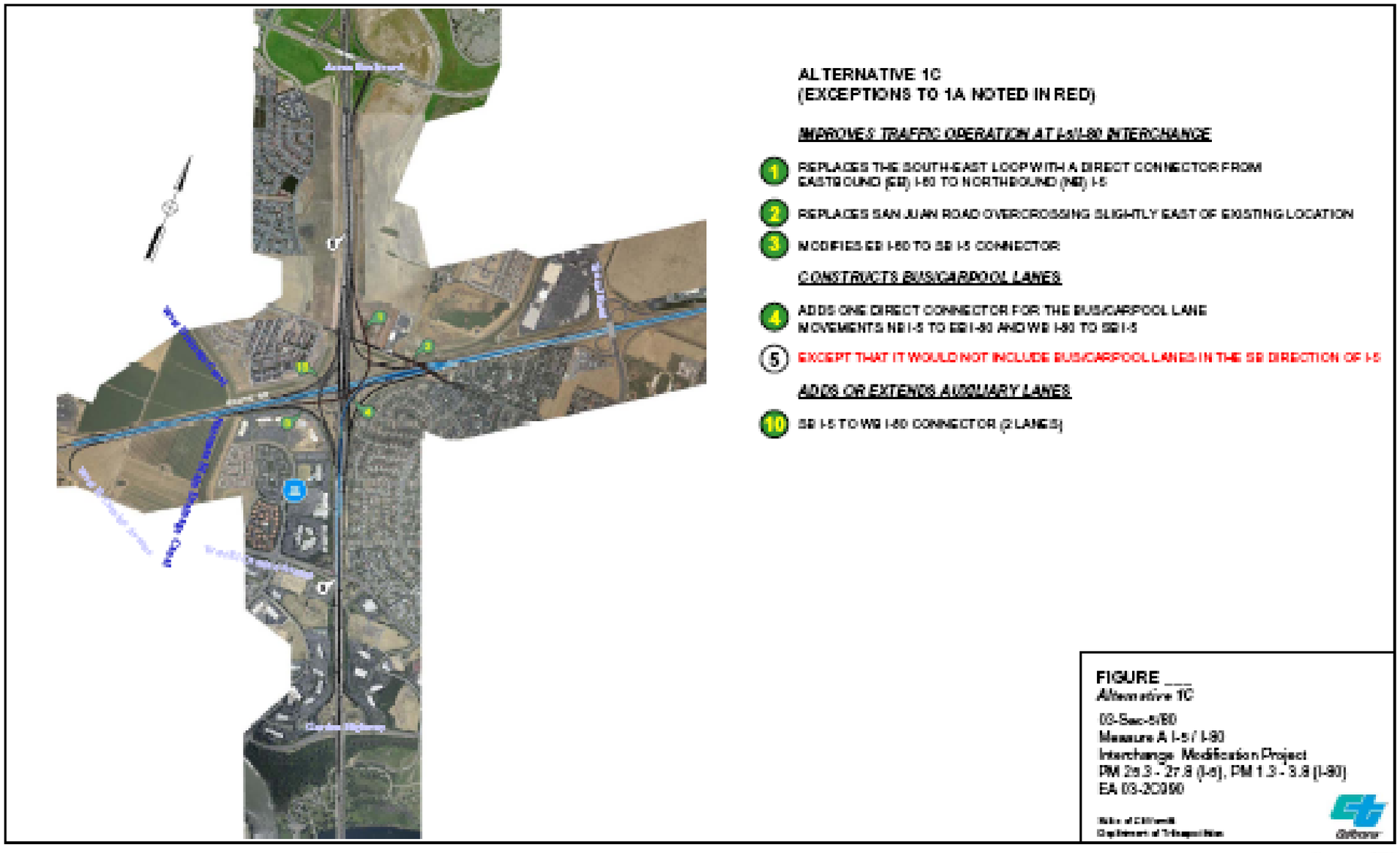
FIGURE ___
Alternative 1B

03-Sac-5/80
Measure A I-5 / I-80
Interchange Modification Project
PM 26.3 - 27.8 (I-5), PM 1.3 - 3.8 (I-80)
EA 03-2C960

State of California
Department of Transportation

November 2011

Figure 4 Alternative 1C



1.6 Alternatives under Consideration

This section describes the proposed project and the design alternatives that were developed by a multidisciplinary team to achieve the project purpose and need while avoiding or minimizing environmental impacts. (See Appendix F for Layouts and Figures 2-4)

Common Design Features of the Build Alternatives

The proposed improvements consist of:

- A direct two-lane mixed flow fly-over connector for the EB I-80 to NB I-5 movement and eliminating the loop in the southeast quadrant.
- A bi-directional fly-over HOV connector for the WB I-80 to SB I-5 and NB I-5 to EB I-80 movements.
- Replace the existing San Juan Road overcrossing to accommodate the widening required by the HOV connector.
- Eliminate the lane drop thereby providing three mixed flow lanes on EB I-80 between the I-5/I-80 interchange and the Truxel Road interchange.
- Add lanes as detailed below.
    - Adding an auxiliary lane on EB I-80 from the I-5/I-80 interchange to the Truxel Road interchange, which connects to the existing auxiliary lane to Northgate Boulevard.
    - Adding an auxiliary lane on SB I-5 from the West El Camino Avenue interchange to the Garden Highway SB on-ramp.

The mixed-flow I-80 EB to I-5 NB connector will fly over I-5 (second level) to constitute a third level. It will be on an embankment supported by retaining walls at the beginning where it exits EB I-80, on a structure in the middle part, and on an embankment at the end where it enters NB I-5. The existing direct connector from EB I-80 to SB I-5 will be relocated as a one-lane mixed-flow connector that will operate the same as the existing one. It will be on an embankment supported by a retaining wall on the southwest side. The relocation is due to the new mixed-flow from EB I-80 to SB I-5, which moves the freeway exit to the west.

The bi-directional HOV connector from NB I-5 to EB I-80 and WB I-80 to SB I-5 will be on an embankment supported by retaining walls at the beginning and end in the median of I-5 and I-80, and on a structure in the middle part. At the beginning and at the end there will be a widening in the median of the roadway to accommodate the two HOV lanes, the retaining

walls, and the shoulders for the mainline freeway lanes. The space required for this widening will trigger the need for additional pavement and additional right-of-way.

San Juan Road Overcrossing

The four spans of the existing San Juan Road Overcrossing structure obstruct the proposed HOV lane connector structure and I-80 lane addition. The structure needs to be reconstructed slightly longer and with only two spans. The new structure would be built in two stages, maintaining traffic on one half of the existing bridge, and then shifting traffic to the newly constructed half. The City of Sacramento will be consulted for a complete closure during construction. The bike path on San Juan Road overcrossing, beginning at Azevedo Road and ending at Airport Boulevard will be perpetuated.

1.6.1 Alternative 1A – Improve interchange and construct HOV Lanes to Garden Highway

In addition to the features common to all the alternatives, Alternative 1A will construct the following auxiliary lanes:

- A lane will be added to the SB-5 to WB-80 connector.
- A lane will be added to the SB-5 to EB-80 connector.
- A shortened auxiliary lane will be added on SB I-5 from the Arena Boulevard interchange to the I-5/I-80 interchange.
- An auxiliary lane will be added on SB I-5 between the Garden Highway SB off-ramp nose and the Garden Highway SB on-ramp: this will create a continuous auxiliary lane from the I-5/I-80 interchange to the Richards Boulevard interchange.
- An auxiliary lane will be added on EB I-80 from the West El Camino on-ramp to the NB I-5 fly-over.
- An auxiliary lane will be added from the NB I-5 to EB I-80 connector to Truxel Road, which connects to the existing auxiliary lane to Northgate Boulevard. This includes a partial modification of both Truxel EB I-80 on-ramps.
- A shortened auxiliary lane will be added between the EB I-80 to NB I-5 Mixed Flow Connector and Arena Boulevard.

1.6.2 Alternative 1B – Alternative 1A without HOV lanes on SB I-5

This alternative includes all the features of Alternate 1A, except that it does not have HOV lanes in the SB direction of I-5, and it only has one lane for the SB I-5 to EB I-80 connector. Due to the limited extent of I-5 in this project, the HOV lanes begin shortly before the interchange, and end shortly thereafter, limiting their usefulness. Therefore this alternative terminates the HOV lane at the end of the WB I-80 to SB I-5 HOV direct connector. This location is also more favorable to a lane reduction than farther south as proposed in Alternative 1A.

1.6.3 Alternative 1C – Alternative 1A without improvements to the loops and to other features

To keep the project cost within budget, it may be necessary to postpone some project features, which will save roadway and retaining wall costs. Features of the project that would be postponed until funding becomes available in this alternative include:

- Construct an auxiliary lane on EB I-80 from the West El Camino interchange to the I-5/I-80 interchange.
- Construct a shortened auxiliary lane on SB I-5 from the Arena interchange to the I-5/I-80 interchange.
- Add a lane to the SB I-5 to EB I-80 Connector, including widening of two structures on I-5: 5/80 Separation and North Connector UC.
- Improvement of the SW loop on Truxel Road.
- Improvements to the WB I-80 to NB I-5 Connector.
- Reduce improvements of the SB on-ramp loop at West El Camino on I-5.
- Add a shortened auxiliary lane between the EB I-80 to NB I-5 Mixed Flow Connector and Arena Boulevard.
- Improvements to the above mentioned loops in the NE and SW quadrants.
- Construct an auxiliary lane on EB I-80 from the I-5/I-80 interchange to the Truxel Road interchange, which connects to the existing auxiliary lane to Northgate Boulevard.

1.6.4 Alternative 2—No Build

Alternative 2 is the No Build Alternative. Alternative 2 would not add any improvements to the existing facility and would not accommodate existing and anticipated traffic growth. The existing condition and the comparison with the No Build alternative is the basis for identifying environmental impacts occurring as a result of the propose project. The no-build alternative would still have normal maintenance and necessary construction to maintain a modern, safe and structurally adequate facility without increasing capacity.

1.6.5 Transportation System Management (TSM) and Transportation Demand Management (TDM)

Transportation System Management (TSM) strategies consist of actions that increase the efficiency of existing roadways; they are actions that increase the number of vehicle trips a roadway can carry without increasing the number of through lanes. Examples of TSM strategies include ramp metering, auxiliary lanes, turning lanes, reversible lanes, and traffic signal coordination. Transportation Demand Management (TDM) focuses on regional strategies for reducing the number of vehicle trips and vehicle miles traveled, as well as increasing vehicle occupancy.

Although Transportation System Management measures alone could not satisfy the purpose and need of the project, the proposed project includes a number of TSM strategies. Auxiliary lanes will be constructed in several locations. Traffic Operations System (TOS) elements, such as ramp metering, changeable message signs, and closed circuit television cameras, will be installed as specified by the Caltrans District 3 Office of Traffic Operations.

Transportation Demand Management (TDM) focuses on regional strategies for reducing the number of vehicle trips and vehicle miles traveled as well as increasing vehicle occupancy. It facilitates higher vehicle occupancy or reduces traffic congestion by expanding the traveler's transportation choice in terms of travel method, travel time, travel route, travel costs, and the quality and convenience of the travel experience. TDM recognizes that as urban areas continue to grow, opportunities for investments in transportation infrastructure ("supply" or capacity side) become limited and that urban transportation corridors increasingly lack the physical space to accommodate more lanes. Thus, typical TDM strategies focus on the "demand" side to make existing transportation facilities work better (Association for Commuter Transportation, et al. 2004). Demand-side strategies are designed to better balance people's need to travel a particular route at a particular time with the capacity of available facilities to efficiently handle this demand. General TDM activities can range from infrastructure investments like high occupancy vehicle lanes and preferential parking spaces, to more programmatic investments like tax-based incentives and marketing. More targeted strategies can include guaranteed ride home programs for carpoolers, transit pass programs, flexible work schedules and real-time route information. The purpose of this project is to provide congestion relief by carrying more people in fewer vehicles during peak periods and promote ride sharing and the use of high occupancy vehicles, such as carpools, vanpools, and express bus services. The proposed project will construct an HOV flyover and connect future HOV lanes to provide continuity of HOV lanes in the vicinity of the project. As such, this project is a transportation demand project by definition.

1.6.6 Final Decision Making Process

After the public circulation period, all comments will be considered, and Caltrans will select a preferred alternative and make the final determination of the project's effect on the environment. In accordance with CEQA, Caltrans will certify that the project complies with CEQA, prepare findings for all significant impacts identified, and if necessary, prepare a Statement of Overriding Considerations for impacts that will not be mitigated below a level of significance, and certify that the findings and Statement of Overriding Considerations have been considered prior to project approval. Caltrans will then file a Notice of Determination with the State Clearinghouse that will identify whether the project will have significant impacts, whether mitigation measures were included as conditions of project approval, whether findings were made, and whether a Statement of Overriding Considerations was adopted. Similarly, if Caltrans, as assigned by the FHWA, determines the NEPA action does

not significantly impact the environment, Caltrans will issue a Finding of No Significant Impact (FONSI) in accordance with NEPA.

1.7 Alternatives Considered but Withdrawn From Further Discussion

The following alternatives were evaluated, but were determined to be infeasible primarily due to the relative high cost and lower benefits compared with the costs and benefits provided by the alternatives chosen for further study.

1.7.1 Alternative 2A and 2B - Improve interchange and construct HOV to the West End Viaduct

Alternative 2 proposed to end the HOV lanes south of Richards Boulevard interchange. This alternative had two options: Alternative 2A decked the American River Bridge with some widening on the outside; Alternative 2B widened on the outside only, without decking the American River Bridge.

These alternatives had a much higher cost because of the longer project and the complexity of the structure, especially the bridge over the American River. The necessary widening of Richards Boulevard would also increase the cost. The City has several Richards Boulevard scenarios under study at this time, but has not determined which one to implement.

1.7.2 Alternative 3 – Improve interchange, construct HOV lanes to the West End Viaduct and construct dedicated HOV ramp to future Rail Yard improvements.

In addition to ending the HOV lanes at the West End Viaduct, as in Alternative 2, Alternative 3 adds a centerline HOV on/off-ramp connecting to the future City of Sacramento's Rail Yard project. This alternative was eliminated due to the high cost and potential environmental impacts of widening the I-5 American River Bridge.

1.7.3 Mixed Flow Alternative

As required by the Federal Highway Administration, a mixed flow alternative was analyzed in the Traffic Report. This alternative would have been very similar to the current Alternative 1A, but would have constructed mixed flow or general-purpose lanes, rather than HOV lanes.

The Mixed Flow Alternative would have served a similar number of vehicles as the proposed project; however, the HOV lane would serve 7,000 more people in the northbound direction and 4,000 more people in the southbound direction.

Since the purpose of the project is to promote ride sharing and the use of high occupancy vehicles, such as carpools, vanpools, and express bus services, the Mixed Flow Alternative would not meet the purpose and need of the project. This project is an important part of the larger existing and planned HOV network proposed for the Sacramento region. The projects in this network will be funded by Measure A, the half-cent sales tax extension from 2009 to 2030 for transportation projects that passed with approximately 75% approval by voters.

1.8 Permits and Approvals Needed

The following permits, reviews, and approvals would be required for project construction:

- California Department of Fish and Game, 2080.1 consistency determination under Fish and Game Code Section 2080.
- United States Army Corps of Engineers (USACE) Section 404 authorization under the Federal Clean Water Act.
- Regional Water Quality Control Board (RWQCB) Section 401 certification.
- United States Fish and Wildlife Service (USFWS) formal consultation under Section 7 of the Federal Endangered Species Act.
- National Emissions Standards for Hazardous Air Pollutants (NESHAP) notification to the Sacramento Metropolitan Air Quality Management District for Asbestos Demolition and Renovation.

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. The study area is defined by the areas likely to be impacted by the project. (See Figure 15, page 106).

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

- Farmlands-No farmland will be impacted by the project.
- Relocation-No residents or businesses will be relocated.
- Parks and recreation-No parks will be impacted by the project.

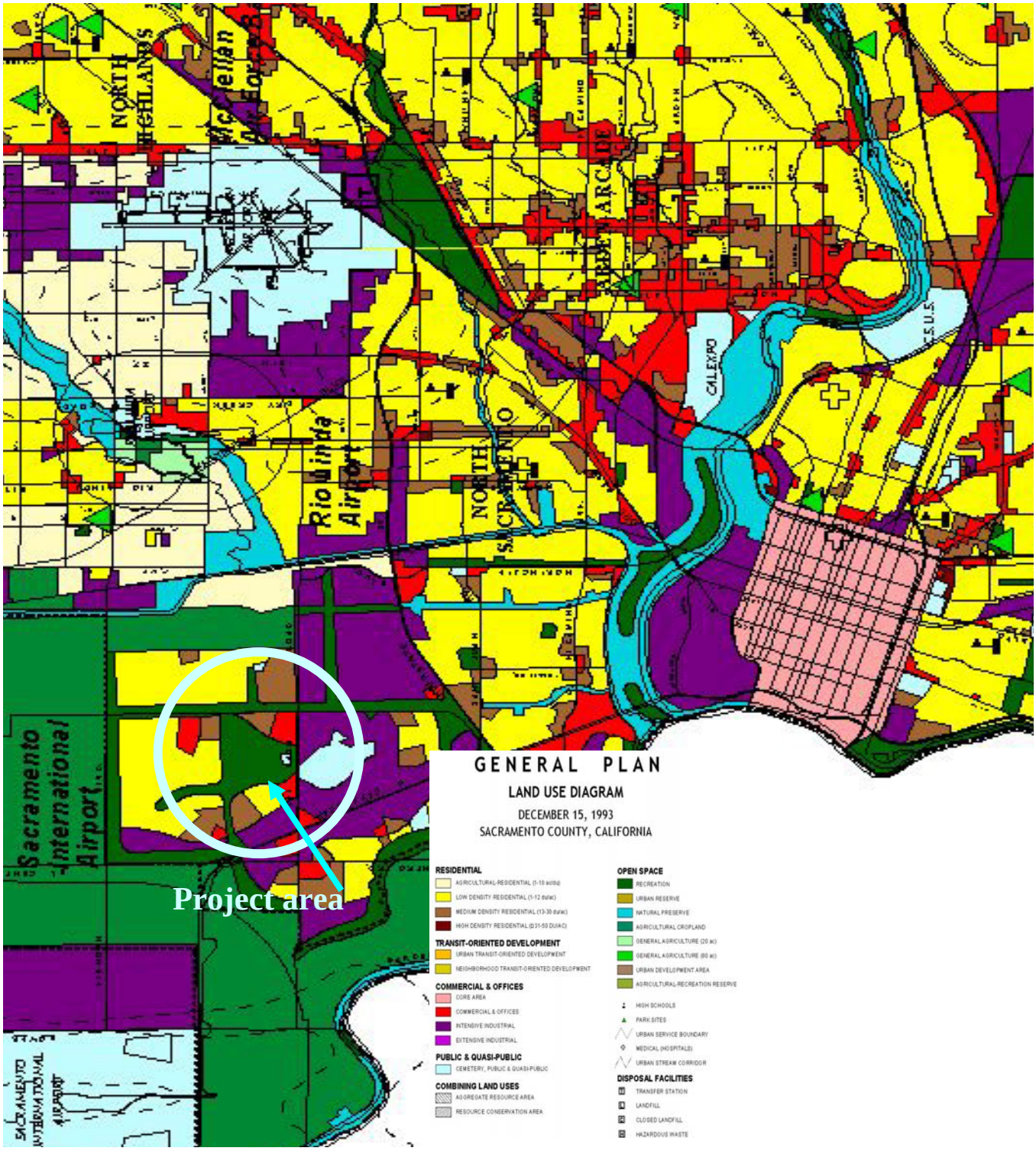
2.1 Land Use

2.1.1 Affected Environment

The project is located in northwestern Sacramento County (See Figure 1, Project Location). Yolo County is immediately to the west of the proposed project. Sacramento County's land uses range from urban to rural. The county's eastern and southwestern sections, as well as a portion of the northwestern section are agricultural. The county's central and northern areas are urban and built up.

Land use within the project vicinity consists of a mix of residential, commercial, industrial, and agricultural uses. (See Figure 5, Land Use) To the northwest of the interchange, there is some agriculture use, however, residential and commercial uses are fast encroaching. The other three quadrants are a mix of residential, commercial, and industrial uses. The majority of the land within the Study Area and within the region has been urbanized and urban uses are slowly encroaching upon the remaining agricultural land to the northwest. Two planned developments are on the map for land that is currently agriculture-- Greenbriar to the north and Camino Norte to the west of the study area. Recreational uses in the form of the American River Parkway and Bike Trail are adjacent to the southern project limit, and the confluence of the American River and the Sacramento River is within the Study Area to the southwest along with Discovery Park, a popular location in the summer to escape the heat and launch boats.

Figure 5 Land Use within Project Vicinity



2.1.2 Environmental Consequences

Alternatives 1A, 1B and 1C

The proposed project requires a small amount of additional right-of-way and thus only very minor effects to land use are anticipated. Temporary construction easements may be required in selected locations.

The proposed project is not expected to result in indirect impacts to land uses by causing lands to be converted to other uses. The degree to which the project would decrease commute times into the urban Sacramento area is negligible, and any momentum to develop the small amount of farmland and open space areas left in the study area would not likely be based upon the degree of congestion relief that is expected from construction of the proposed project. Please see Section 2.4 ("Growth") for more information on potential indirect effects to land use and other environmental resources resulting from the proposed project.

Alternative 2—No Build Alternative

The No Build Alternative would not have an impact on land use or planning. If the project is not constructed, past trends and data from other cities suggest that commuters are willing to tolerate lengthy commutes in order to maintain their preferred locations for home and work.

2.1.3 Avoidance, and Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are required.

2.2 Jobs/Housing Balance

How land uses are distributed within communities has implications for local and regional commuting patterns. A city with very little land used for housing, relative to its supply of industrial or commercial land, will be a destination for commuters. A city that is predominantly residential will be a source of commuters.

Typically, a community is considered "balanced" when the number of employment opportunities is approximately equal to the number of homes. The ratio of jobs to housing units in a place provides an estimate of the overall tendency of workers to commute in or out of that place. In theory, a balanced community would be one in which no workers were obliged to leave the community for work.

At the same time, commuting patterns are more complicated than the jobs-housing balance alone would indicate. For example, according to SACOG data the City of Sacramento is the major employment center in the region, with 1.9 jobs for each housing unit (SACOG, n.d. (a)). However, even with an abundance of employment opportunities, almost 40 percent of the city's workers worked outside of the city in the year 2000 (up from 32 percent at the time of the 1990 Census).

SACOG projections show that, under the Preferred Blueprint Scenario, the City of Sacramento would have 1.7 jobs for each housing unit by the year 2050, compared to 2.6 if the Blueprint were not implemented. (SACOG, Summary Statistics for Sacramento City). The SACOG planning region as a whole is also expected to attract more jobs than homes overall, reaching an average ratio of 1.2 jobs for every household by the year

2050 (SACOG, n.d. (b)). The proposed regional network of HOV lanes is included in the MTP 2035, which is based upon the SACOG Blueprint Preferred Scenario, and so is part of a larger land use and transportation plan that encourages a balance of jobs and housing opportunities within the region's communities.

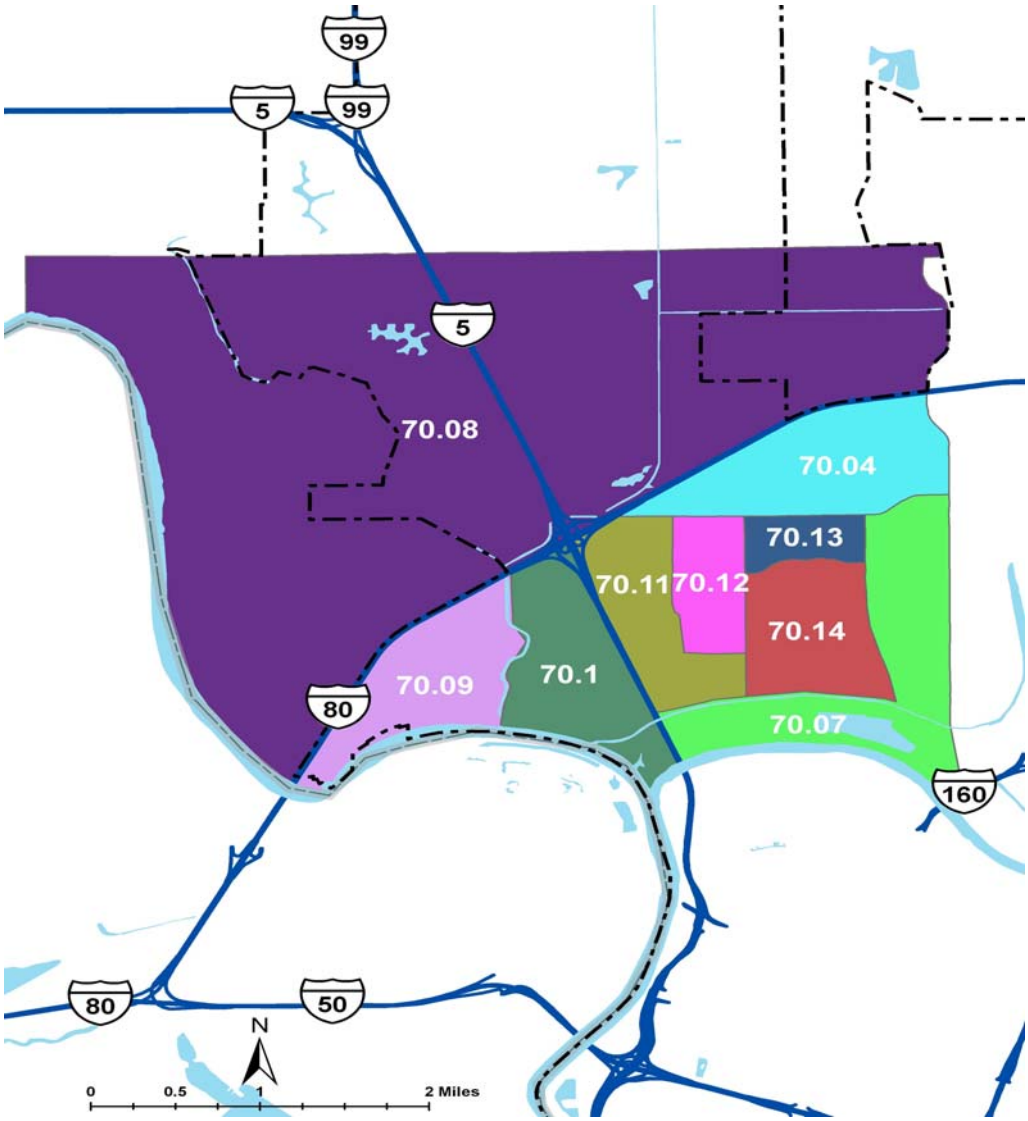
2.2.1 Affected Environment

Sacramento's employment base in 2005 was 339,000, with 179,000 total housing units, a ratio of 1.89 jobs for every housing unit, almost twice as many jobs as homes. Using SACOG projections for employment and housing units for 2035 (975,662 and 732,678, respectively) the countywide jobs/housing balance would be 1.33 jobs for every residence.

South Natomas has more multi-family residential development compared to other community plan areas. The majority of employment in South Natomas is in office uses, with very few industrial jobs. Office and business park development is located primarily along I-80 at Northgate Boulevard and I-5 where large-scale office parks provide a highly visible and well-defined entrance to downtown. The Riverfront District, located north of the Garden Highway on the Sacramento River, is a mixed-use district with restaurants, marine retail stores, and housing. Major corridors such as Truxel and West El Camino provide additional community-serving retail and services. South Natomas has a relatively balanced jobs-to-housing ratio with 0.75 job for each housing unit.

North Natomas is a major employment center for the Sacramento region with multiple office and light industrial employment centers. The majority of North Natomas jobs are either in office or industrial sectors. Unlike other areas of Sacramento that have large federal and state employment centers, only a small segment of North Natomas jobs are in the public sector. The jobs-to-housing ratio is relatively balanced with 1.2 jobs for every housing unit in the incorporated area. The Downtown-Natomas-Airport (DNA line) light rail transit will eventually link the employment centers and the airport to the greater Sacramento area.

Figure 6 Census Tract locations



Commuting Patterns

At the time of the 2000 Census, 75 percent of workers living in the county commuted to work in single occupant vehicles, while 14.4 percent traveled in carpools. Three percent of workers used public transit, two percent walked to work, and 3.4 percent worked at home. The average commute time for workers living in the county was 25.4 minutes, compared to 27.7 minutes statewide. Within the Study Area, 75 percent drove alone to work, while 16 percent carpooled and approximately 6 percent used other transportation, from public transit to biking or walking. The average commute time for workers living in the Study Area was between five and twenty minutes. On average, a little less than half (46percent) of residents in the Study Area work outside of the city of Sacramento. Figure 6 shows the locations of the census tracts that are referenced in Table 7.

Table 7 Means of travel to work

Census Tracts	Total	Drove alone	Carpool	Public transportation	Bicycle	Walked	Other means	Worked at home
70.04	3,287	2,430	630	115	8	38	0	66
70.07	1,912	1,368	365	96	17	17	0	49
70.08	538	443	41	7	0	8	0	39
70.09	802	650	87	0	0	0	29	28
70.10	1,857	1,499	211	50	0	33	0	64
70.11	3,130	2,299	524	103	58	75	4	67
70.12	1,914	1,583	202	74	0	24	8	23
70.13	1,396	1,023	230	82	7	15	0	39
70.14	3,366	2,366	610	164	33	61	24	103
Average Census Tracts		75%	16%	4%	1%	1%	>1%	3%
City of Sacramento	166,419	118,182	27,126	7,681	2,252	4,602	1,288	4,875
Sacramento County	536,310	404,130	77,021	16,502	4,573	10,999	3,598	18,290

Table 8 Commute time

Census Tracts	Less than 5 minutes	5-20 minutes	20-60 minutes	Over an hour	Worked at home
70.04	1%	48%	44%	6%	2%
70.07	2%	54%	38%	6%	3%
70.08	2%	33%	60%	5%	7%
70.09	0%	55%	37%	8%	3%
70.1	4%	56%	34%	6%	3%
70.11	2%	60%	35%	4%	2%
70.12	1%	53%	41%	5%	1%
70.13	2%	41%	51%	7%	3%
70.14	3%	48%	45%	4%	3%
City of Sacramento	2%	46%	47%	5%	3%
Sacramento County	2%	38%	54%	6%	3%
California	2%	38%	49%	10%	4%

Table 9 Location of Work

Census Tracts	Total:	Worked in Sacramento	Worked outside Sacramento	Percent working in Sacramento	Percent working out of Sacramento
70.04	3,287	1,805	1,482	55%	45%
70.07	1,912	1,058	854	55%	45%
70.08	405	187	218	46%	54%
70.09	794	394	400	50%	50%
70.1	1,857	987	870	53%	47%
70.11	3,130	1,816	1,314	58%	42%
70.12	1,914	1,103	811	58%	42%
70.13	1,396	743	653	53%	47%
70.14	3,366	1,989	1,377	59%	41%

Portions of census tract 70.08 and 70.09 lies outside Sacramento City limits
CT 70.08, 133 residents live outside of City limits and were not included in the total
CT 70.09, eight residents live outside City limits and were not included in the total

Existing Development and Planned Growth

While South Natomas has been developed for over 40 years, North Natomas is relatively new. Business parks and retail commercial areas have recently been constructed in the Natomas Crossing and Village 5 locations, which are close to the Arco Arena. There is very little remaining vacant land, and just a few buildings still in the process of being constructed.

Based on Census data, several areas in Sacramento County saw population growth of 25 percent between 1990 and 2000. SACOG projects that the county's population will increase 27 percent by 2025, from 1.36 million to 1.73 million. The number of jobs in the county is projected to increase 30 percent to 854,800.

The City of Sacramento is expected to continue to be the region's largest city and employment center. Sacramento is expected to grow by nearly 90,000 residents (20percent growth) to a 2025 population of 538,000. The city is expected to add 112,700 jobs during this period, a 38 percent increase, for a 2025 employment base of over 400,000 jobs.

2.2.2 Environmental Consequences

Alternatives 1A, 1B and 1C

The proposed project would require a minor amount of private or publicly owned right-of-way acquisition, thus, no very minor effects to land use are anticipated. Temporary construction easements may be required in selected locations.

The proposed project is not expected to result in indirect impacts to land uses, by causing lands to be converted to other uses. The degree to which the project would decrease commute times into the urban Sacramento area is nominal, and any impetus to develop these farmland and open space areas would not likely be based upon the degree of congestion relief that is expected from implementation of the proposed project. Please see Section 2.4 ("Growth") for more information on potential indirect effects to land use and other environmental resources resulting from the proposed project.

Alternative 2—No Build Alternative

The No Build Alternative would not have an impact on land use or planning. If the project is not constructed, past trends and data from other cities suggest that commuters are willing to tolerate lengthy commutes in order to maintain their preferred locations for home and work.

2.2.3 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are required.

2.3 Consistency with State, Regional, and Local Plans

2.3.1 Affected Environment

SACOG Regional Blueprint

In 2002, the Sacramento Area Council of Governments (SACOG) began its Sacramento Regional Blueprint planning effort (Blueprint). SACOG consists of El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba Counties, along with their constituent municipal governments. The Blueprint's purpose is to establish a long-term plan for growth within the region.

In December 2004, a preferred Blueprint scenario was defined that focuses on compact, mixed-use development and a greater variety of transit choices. This Blueprint is intended to guide regional development through 2050. The proposed project is one of the transportation improvements included in the Blueprint's Preferred Scenario.

2009/2012 Metropolitan Transportation Improvement Plan

The Metropolitan Transportation Improvement Plan (MTIP) is a short-term listing of surface transportation projects that receive federal funds, are subject to a federally required action, or are regionally significant. Apart from some improvements to the region's airports and the Port of Sacramento, all regionally significant transportation projects and federally funded capital projects are part of the MTIP. This means that many--but not all--transit, highway, local roadway, bicycle, and pedestrian investments are included in the MTIP, which is prepared and adopted by SACOG about every two years.

Only projects included in the Metropolitan Transportation Plan (MTP) may be incorporated into the MTIP. The MTIP derives all its projects either directly from the MTP or indirectly from the policies and lump sums within it. The MTP is the long range policy and planning document while the MTIP is the short range implementing document that enables those planned projects to begin work. Specifically, the MTIP lists those projects from the MTP that have committed or reasonably available funding and intend to begin a phase of work during the 4 years of the MTIP.

The MTIP must comply with three key tests. First, it must give the public the opportunity to comment. Second, it must demonstrate that the amount of dollars programmed (committed) to the projects does not exceed the amount of dollars estimated to be available. Therefore the MTIP includes a financial summary that demonstrates financial constraint, namely that sufficient financial capacity exists for programmed projects to be implemented. Third, it must conform to the State Implementation Plan (SIP) for the region with consideration to the federal Clean Air Act.

SACOG's 2009/2012 MTIP endorses the concept of a regional network of HOV lanes, including the proposed project. In response to the idea that congestion management would be better accomplished with investments in public transit, the MTIP states that:

> With more than a million empty seats in autos, but fewer than 10,000 empty seats in buses every morning and afternoon, carpools clearly have a place in the picture. [The projected]…53 percent increase in travel by 2027 means that, even if transit use could be increased tenfold and bicycle/walk trips tripled, the region still would face a 40 percent increase in travel by auto. At least in some places the road system must be expanded too.

The project is included in the 2009/2012 MTIP.

2035 Metropolitan Transportation Plan (MTP 2035)

SACOG has prepared the MTP for 2035 to address anticipated transportation needs of the Sacramento Region forecasted for the year 2035. This MTP is a 28-year plan for transportation improvements in the six-county region based on projections for growth in population, housing and jobs. This is the first Metropolitan Transportation Plan to be significantly influenced by Blueprint growth principles. With the assumption that the land use base in this plan will be implemented, the MTP 2035 invests a far greater share of transportation resources to alternative modes and trip reduction. This balance of transportation investments will best serve a more compact land use pattern with the effect of shortening trips and improving air quality. In addition to investing directly in these travel modes and in transportation demand management programs such as rideshare and employer programs, the MTP 2035 also provides for carpool/express bus lanes on freeways, bridges that shorten distances for bicyclists and "complete streets" that safely accommodate vehicles, transit, bicyclists, and pedestrians. The proposed project is listed in the 2035 MTP as follows: "Reconstruct I-5/I-80 Interchange, including HOV lane connectors, and construction of HOV lanes from the I-5/I-80 Interchange to downtown Sacramento."

City of Sacramento General Plan

In November 2005, the City of Sacramento adopted its "Vision and Guiding Principles" document, which sets out the City's key values and goals for the future. This document is designed to guide the development of the General Plan throughout the update process. The "guiding vision" identified in this document is to make Sacramento "the most livable city in America." In terms of transportation choices, the City's guiding principles emphasize multi-modal transportation and greater investment in transit systems.

As background to the "Visions and Guiding Principles" document, the City has also adopted (in November 2005) a "Planning Issues Report" that identifies key planning issues. The first issue mentioned is "Smart Growth," typified by compact development, higher residential densities, mixed-uses, a range of transportation choices, walkable neighborhoods, and open space protection. The "Planning Issues Report" mentions SACOG's Regional Blueprint as advocating this type of growth.

2030 General Plan

March 3, 2009, the City of Sacramento adopted the "2030 General Plan." This General Plan is the first comprehensive revision of the City's General Plan in more than 20 years. The 2030 General Plan seeks to revitalize older communities by bringing new housing, shopping, and employment choices to existing neighborhoods. It also emphasizes a balanced transportation system that takes advantage of existing light rail and makes improvements for bicyclists and walkers. The Plan does not address HOV lanes in particular,

however does encourage commute trip reduction by encouraging employers to provide preferential parking for carpools/vanpools along with transit subsidies, bicycle facilities, alternative work schedules, ridesharing, telecommuting and work-at-home programs and employee education. In addition, Goal M 1.4.1 "Increase Vehicle Occupancy," states that the City shall work with a broad range of agencies (e.g., SACOG, Sacramento Air Quality Management District (SMAQMD), and Caltrans) to encourage and support programs that increase vehicle occupancy including the provision of traveler information, shuttles, preferential parking for carpools/vanpools, transit pass subsidies, and other methods.

Sacramento County General Plan

Sacramento County adopted its General Plan in December 1993. In its overall philosophy regarding future growth, the County's General Plan has much in common with SACOG's Regional Blueprint. The General Plan warns of problems associated with continuing the traditional pattern of low-density suburban development. The County's General Plan states:

> Maintaining the status quo is unrealistic: the incremental financial environmental cost of low-density urban fringe growth is greater than existing and new residents are willing to pay. The General Plan resolves the problems of increased development costs, premature development, and regional shifts by strategies, which direct the unincorporated area towards a more urban than suburban character.

The County's General Plan Circulation Element reflects this concern with sprawling development patterns. The Circulation Element is critical of what it calls the automobile and road-oriented transportation system, associating it with low density, sprawling communities. The Circulation Element states that:

> The present land use and transportation system is oriented towards private automobiles. A road network releases forces throughout the economy that causes increased driving because destinations are expanding outward…. Improving land use and transportation planning will reduce these future spillover effects.

The Circulation Element's overall objectives are described as seeking imaginative means to increase the supply of transportation options, managing the demand for transportation, and building a transportation system balanced between roads and transit.

Regarding proposed expansions of the freeway system, the County's General Plan supports the construction of a regional network of HOV lanes. Circulation Element Policy 24 describes HOV lanes as having a "significant potential to increase the effective carrying capacity of the existing road network by increasing the number of individuals in each vehicle." As a result, HOV lanes benefit air quality and transit operations.

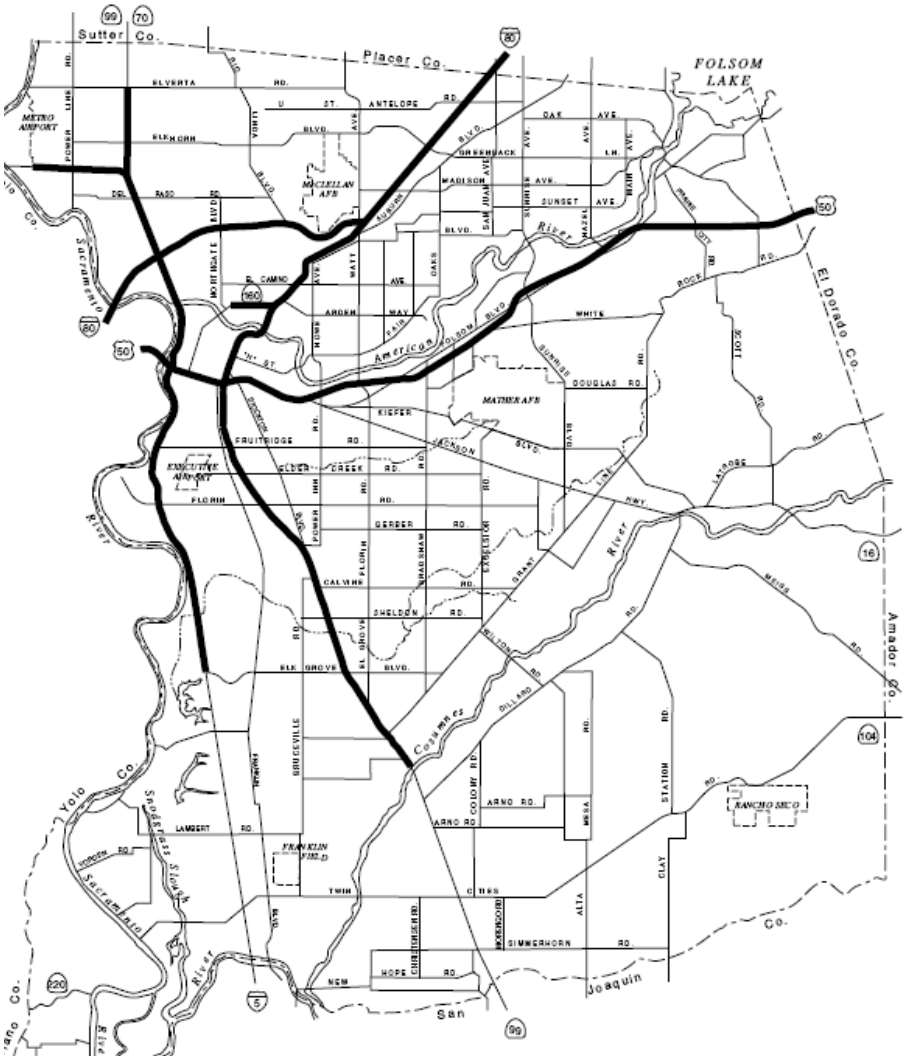
But the Circulation Element points out that "The traditional Caltrans policy to never take an existing lane for an HOV lane is outdated. That Caltrans policy would allow HOV lanes only when they are newly constructed, but new construction is only an inducement to additional automobile travel which will worsen congestion and air quality."

General Plan Update

Sacramento County is currently updating its General Plan. A Public Review Draft was released in November 2006 and included a Circulation Element. The latest draft can be found on the internet, dated April 13, 2009. Under High Occupancy Vehicle Lanes, it states:

> High Occupancy Vehicle (HOV) lanes are restricted to carpools, vanpools, and transit vehicles. Most HOV lanes may be used by any vehicle carrying two or more people, although some are restricted to vehicles with three or more passengers. HOV lanes are intended to increase the person-carrying capacity of the transportation system without requiring additional vehicle capacity. This is cost-effective for government, and improves air quality. Sacramento County supports the development of a regional network of HOV lanes as shown in the inset map on the Transportation Plan Map (See Figure 7).

Figure 7 HOV Lane Network



According to Sacramento County, the HOV inset on the updated Transportation Plan Map should be consistent with the current 1993 Transportation Plan Map, which shows HOV lanes along the entire length of I-80 within Sacramento County.

South Natomas Community Plan

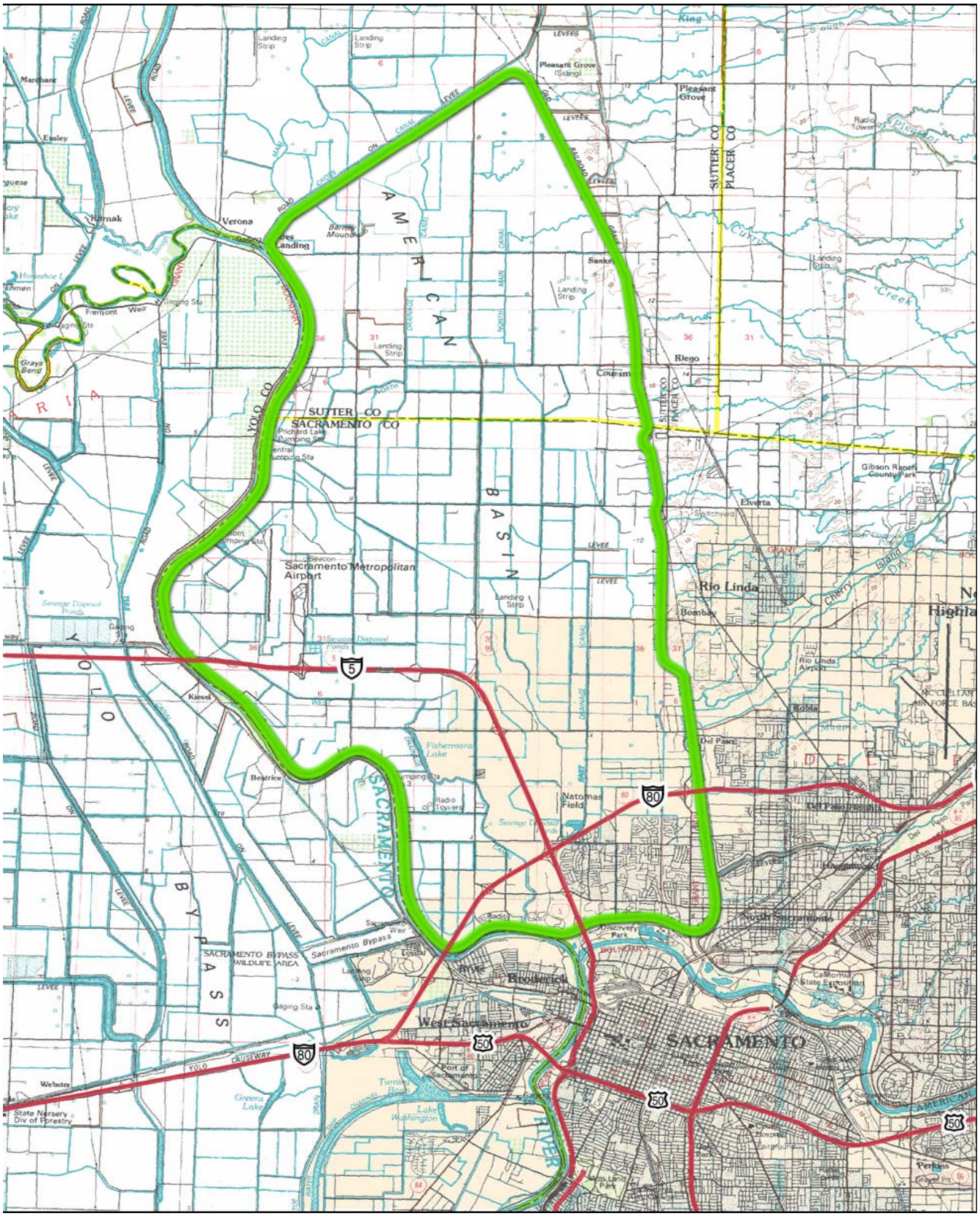
South Natomas developed predominantly as residential subdivisions between 1950 and 1980. The South Natomas Community Plan, adopted in 1978, envisioned a high-density, transit-oriented, residential community with a small amount of office space serving only local needs. By 1982, expectations had changed and plan amendments added 2.4 million square feet of office park adjoining either side of I-5. The City Council adopted a revised South Natomas Community Plan in 1988. The Plan included a total of 300 acres of existing and proposed parks, five elementary schools and six neighborhood shopping centers. Office/business park locations were intended to take advantage of freeway visibility, avoid disrupting residential areas, and minimize pressure on congested street intersections. In 1990, the City adopted a Facilities Benefit Assessment District that applied to all new development (including residential). This provided a funding mechanism to pay for infrastructure within the planning area. There are no policies in the South Natomas Community Plan that specifically address transportation.

Habitat Conservation Plans (HCP)

Natomas Basin Habitat Conservation Plan

The Natomas Basin HCP (NBHCP), adopted in November 1997 and revised in 2003, was designed to promote biological conservation along with economic development and continuation of agriculture in the 53,341-acre Natomas Basin, located in portions of northern Sacramento and southern Sutter Counties. The project is located within the Natomas Basin (See Figure 8, Natomas Habitat Conservation Basin).

Figure 8 Natomas Habitat Conservation Basin



The program implementation is under the direction of the U.S. Fish and Wildlife Service, California Department of Fish and Game as the permittors with the City of Sacramento, Sutter County, the Natomas Basin Conservancy, and Reclamation District 1000. The Natomas Basin Conservancy carries out the mitigation requirements of the NBHCP on behalf of the other permittees.

The NBHCP established a multi-species conservation program to mitigate the expected loss of habitat and incidental take of protected species that would result from urban development, operation of irrigation and drainage systems, and rice farming. Twenty-two species were included, but the primary species were giant garter snake *(Thamnophis gigas)* and Swainson's hawk *(Buteo swainsoni)*.

2.3.2 Environmental Consequences

Alternatives 1A, 1B and 1C

Because the project is an essential element of the HOV network within the SACOG planning area, and the HOV network is consistent with the state, county and city general plans, the proposed project is consistent with the relevant state, regional, and local plans and programs.

This project is located within the Natomas Basin Habitat Conservation Plan; however the impacts to the targeted species are minor and will be mitigated to a less than significant level. The project requires a minor amount of right-of-way, however, since the right-of-way required is adjacent to the existing freeway, and not desirable habitat for the targeted species of the NBHCP and the project is not expected to cause a change in land use, it would not have an impact on the NBHCP (See Section 2.26 for more information on Swainson's hawk and giant garter snake).

Alternative 2—No Build Alternative

The No Build Alternative is not consistent with the relevant state, regional, and local plans, which promote the policy of encouraging alternative modes of transportation, including the use of high occupancy vehicles.

2.3.3 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are required.

2.4 Growth Inducement

Regulatory Setting

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

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

2.4.1 Affected Environment

According to the Caltrans Growth-Related Guidance, key elements to look at when evaluating whether or not a project has the potential to have growth-related impacts include accessibility, project type, project location, and growth pressure.

Accessibility is the most direct link between transportation and land use and refers to the project's potential to reduce time-of-cost travel, either in terms of money or time, potentially enhancing the attractiveness of surrounding land to developers and consumers. The project does not provide additional accessibility to any particular area.

Project type is another important factor to consider when evaluating the need for a growth-related analysis. According to the Growth-Related Guidance:

> Adding high occupancy vehicle (HOV) lanes or mixed flow lanes are examples of projects that could cause growth-related impacts because they add capacity to an existing facility. These projects warrant closer consideration to determine whether an analysis of growth-related impacts will be necessary.

Project location is another element of growth-related impacts. The proposed project is located within the city limits of Sacramento and Sacramento County. The area surrounding the project limits is predominantly developed, except for the northwest quadrant, where farmland is still prevalent. According to the Growth-Related Guidance, undeveloped parcels on the urban/suburban fringe (such as those located in the northeastern quadrant), can be prime growth areas, particularly if the land is suitable, development regulations are favorable, and the area is in the path of an expanding urban/suburban core.

Finally, growth pressure must be considered when evaluating the potential for growth-related impacts. Growth pressure is influenced by circumstances such as land availability and price, existing infrastructure, the regional economy, vacancy rates, and land use controls, although the degree to which growth is influenced by these circumstances will vary from project to project.

The proposed project is consistent with regional planning efforts, including SACOG's Regional Blueprint Preferred Scenario and the MTP 2035. The population distribution anticipated in SACOG's planning is based on a future transportation network that includes the proposed project. As noted in the MTP 2035:

> Land use decisions are key to the success of this MTP. The 2035 land use base for this MTP, which is largely consistent with the 2050 growth vision, supports a transportation system that reduces growth in vehicle-miles-traveled and traffic congestion and makes

> walking, bicycling, and transit preferable choices for more trips. The transportation system in this plan has been custom designed to match this land use pattern, and about 75 percent of the improved performance of the system is directly due to land use, not to specific transportation projects. Thus, implementation of the locally-determined Blueprint land uses is the most important part of successfully implementing this MTP (SACOG, 2008a).

Development planned for downtown Sacramento consists almost exclusively of infill development, consistent with the "Smart Growth" principles advocated in the City's Draft General Plan update and SACOG's Blueprint Preferred Scenario.

There are three developments approved for Sacramento County; Camino Norte and Greenbriar and Township 9, near Richards Boulevard. No additional developments are planned in the immediate project area. Given the amount of past and planned growth in the region and along the project corridor, the proposed project would not add sufficient capacity to influence growth patterns.

2.4.2 Environmental Consequences

Alternative 1A, 1B and 1C

The proposed project is not expected to influence or alter development patterns in the study area and thus no measurable growth-related indirect effects to resources of concern are expected.

The proposed project seeks to reduce congestion and encourage alternative means of commuting through the addition of an HOV flyover connecting westbound I-80 and southbound I-5. The project would provide greater connectivity within the HOV lane system in the Sacramento region, which consists of existing and planned HOV lanes on I-80, I-5, US 50, and SR 99. These improvements are being proposed because of demands put on the region's transportation system due to the existing rapid rates of growth in the area. The projects are also part of a long-term Caltrans effort to encourage the use of transit and multi-passenger occupied vehicles.

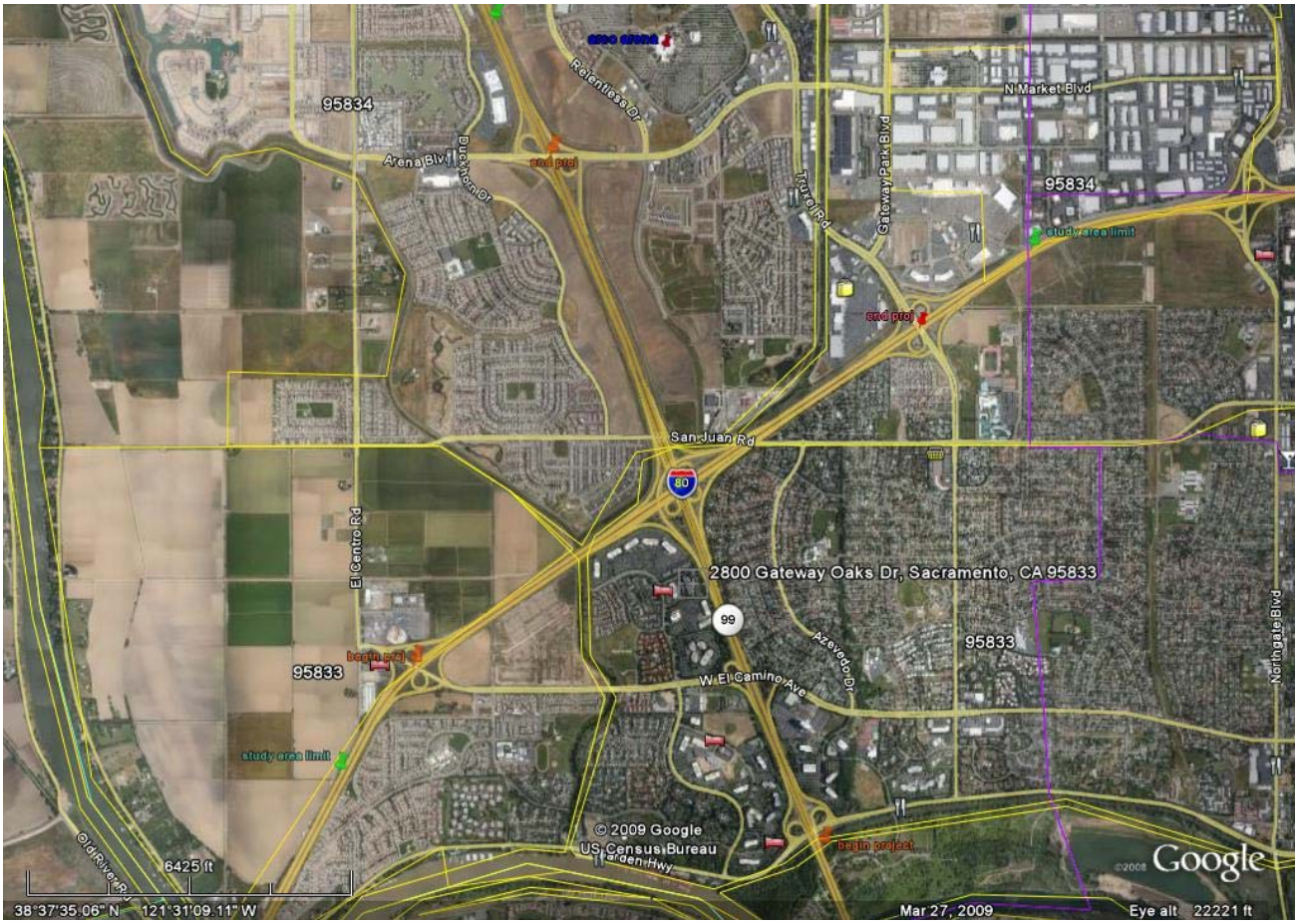
The proposed project would increase the capacity of an existing freeway that is currently heavily congested. The project would moderately improve travel times, especially for bus and carpool users. (See Table 15 for peak hour travel times) The HOV lane is designed to provide an alternative to single-occupancy vehicle travel and encourage drivers to combine vehicle trips, thus removing some cars from the freeway. The project would not create excessive new capacity that would induce new, unplanned growth or result in a shift in travel patterns. The design of the project does not create any new access points nor would the project remove any key restraints to growth—it would not change any land use designations or open any new areas to development.

Alternative 2—No Build Alternative

With the exception of the agricultural land in the northwest quadrant, there is very little vacant land available within the project area, Alternative 2 is equally unlikely to result in growth-related indirect impacts to resources. Figure 9 shows a recent "Google Earth" snapshot of the project area, showing the areas that are in

agricultural use and those currently vacant. It is not anticipated that the project will cause the conversion of farmland to other uses, such as housing or retail. Other factors, such as local planning and economic pressures, are affecting the conversion of agricultural lands. Community comprehensive plans and planning laws, such as land use and zoning regulations, are most often the primary means of controlling growth and development. County and local governments use these plans and regulations to encourage or discourage growth in their communities as they see appropriate. Any changes to these plans or regulations would involve considerable public review and input. Other constraints to growth can include public utility services such as water, natural gas, electric, and sewage.

Figure 9 Aerial of Project Area, March 27, 2009



2.4.3 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization or mitigation measures are required. The proposed project is not expected to alter development patterns or the pace of development in the study area, thus no growth-related indirect impacts to resources are expected to result from the implementation of the proposed project.

2.5 Community Impacts

2.5.1 Regulatory Setting

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

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

2.5.2 Affected Environment

Population

At the time of the 2000 U.S. Census, Sacramento County had a population of just over 1.2 million and the City of Sacramento had a population of 407,018. Today's estimated populations are just over 1.4 million for Sacramento County and 475,743 for the City of Sacramento (California Department of Finance, 2008). Sacramento County's population is expected to increase by approximately 668,000 between 2005 and 2035, a 51 percent increase.

SACOG's projections included in the 2006 MTP indicate that between 2000 and 2025, the population of the SACOG region will increase 37 percent and employment will grow 39 percent (SACOG, 2006). Between 2005 and 2035, the region is expected to add 1.2 million residents requiring 535,000 jobs and 525,000 housing units (SACOG 2008a). The estimated January 1, 2008 population for Sacramento County is just over 1.4 million (California Department of Finance, 2008).

Ethnicity

The Study Area's ethnic composition is generally representative of the city and the county. White residents account for approximately 55 percent of the population of the Study Area and 48 percent of the city and 64 percent of the county. Asian residents make up approximately 10 percent of the Study Area and county and 17 percent of the city. African American residents make up 14 percent of the Study area and city and 10 percent of the county. People identifying themselves as Hispanic or Latino (which can include members of any race) made up approximately 26 percent of the Study Area and county and 22 percent of the city.

Housing

The Study Area's housing stock includes a combination of multi-story apartment buildings and single-family homes. Neighborhoods in downtown Sacramento include single-family homes, multi-family dwellings, and local businesses.

Table 10 provides data on the housing stock in the Study Area, the county and the City of Sacramento based on the 2000 Census. Between the 2000 Census and the 2004 American Community Survey (ACS), the county's housing supply increased by nearly 9 percent, from 474,800 housing units to 516,000 units. The vacancy rate increased from 4.5 percent in 2000 to 5.4 percent in 2004. The median home value in the county was $144,200 at the time of the 2000 Census, while the median household income was $43,800. Property values have risen slightly. According to the National Association of Realtors, the median value of homes in the Sacramento metropolitan area, which includes Arden-Arcade and Roseville, was $175,000 in June 2009.

Table 10 Housing data

Census Tracts	Number of housing units	Vacancy Rate	Median year structure built	Median value	Median Income
70.04	2,621	3%	1985	$117,800	$43,228
70.07	1,607	5%	1970	$102,600	$45,297
70.08	597	7%	1986	$154,100	$51,103
70.09	741	17%	1987	$220,100	$57,938
70.10	1,872	19%	1991	$217,600	$50,365
70.11	2,537	3%	1985	$131,900	$38,397
70.12	1,450	2%	1983	$113,000	$50,384
70.13	1,036	2%	1983	$119,200	$47,031
70.14	2,811	4%	1983	$118,100	$44,750
City of Sacramento	163,914	6%	1967	$126,000	$37,049
Sacramento County	474,814	4%	1974	$141,100	$43,816
California	12,214,549	6%	1970	$198,900	$47,493

Source: http://factfinder.census.gov/servlet/DTTable?_bm=y&-context=dt&-ds_name=DEC_2000_SF3_U&-_geoSkip=10&-CONTEXT=dt&-mt_name=DEC_2000_SF3_U_P052&-mt_name=DEC_2000_SF3_U_P053&-mt_name=DEC_2000_SF3_U_P054&-mt_name=DEC_2000_SF3_U_H001&-mt_name=DEC_2000_SF3_U_H085&-mt_name=DEC_2000_SF3_U_H084&-mt_name=DEC_2000_SF3_U_HCT020&-mt_name=DEC_2000_SF3_U_HCT019&-tree_id=403&-_skip=0&-redoLog=false&-all_geo_types=N&-geo_id=04000US06&-geo_id=05000US06067&-geo_id=14000US06067007004&-geo_id=14000US06067007007&-geo_id=14000US06067007008&-geo_id=14000US06067007009&-geo_id=14000US06067007010&-geo_id=14000US06067007011&-geo_id=14000US06067007012&-geo_id=14000US06067007013&-geo_id=14000US06067007014&-geo_id=16000US0664000&-search_results=16000US0664000&-_showChild=Y&-format=&-_lang=en&-_toggle

Employment

Workers based in the Study Area are employed in a range of industries. The top three industry categories in terms of employment of residents living in the South Natomas area include "Retail", "Office" and "Other."

The employment profile in the Study Area closely mirrors the types of businesses that are located in the region. Although a large portion of the county is dedicated to farming activities, the county relies on service industries as its economic base. The predominant employment in the study area is retail and office. The construction of the Natomas Center (a satellite of American River College) has recently provided jobs in the educational field.

Civilian unemployment rates in the Sacramento County and City of Sacramento were 8 percent and 7 percent, respectively (2000 Census). According to SACOG projections up to 2025, job growth is expected to outpace population growth. The average unemployment in the Study Area is 6 percent.

Schools

The Natomas Unified School District serves residents within the Study Area and its immediate vicinity.

2.5.3 Environmental Consequences

The proposed project will not have an effect on the community demographics, including the population, ethnicity, housing, or employment. The project does not change the land use within the project area, and does not eliminate access to areas where access was previously available.

2.5.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are required.

2.6 Fiscal Impacts

Property Tax

The proposed project would require a minor reduction in property tax revenue to Sacramento County because of the acquisition of small sections of private property. Given the overall amount of Sacramento County's total property tax revenue, the reduction in revenue would be negligible. The acquisition of private property for the project right-of-way would make the property public, and therefore not subject to taxes.

Sales Tax

The proposed project will not impact any business operations in the Study Area. Sales tax revenues from businesses in the Study Area would remain unchanged.

Property Values

The proposed project is not likely to have a substantial impact on any of the factors that currently influence property values in the Study Area.

2.7 Environmental Justice

2.7.1 Regulatory Setting

All projects involving a federal action (funding, permit, or land) must comply with Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,* signed by President Bill Clinton on February 11, 1994. This Executive Order directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. Low income is defined based on the Department of Health and Human Services poverty guidelines. For 2009, this was $22,050 for a family of four.

Table 11 2009 Poverty Guidelines

Persons in family	**Poverty guideline**
1	$10,830
2	14,570
3	18,310
4	22,050
5	25,790
6	29,530
7	33,270
8	37,010
9+	Add $3,740 for each additional person

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

A general approach for identifying potential environmental justice (EJ) population areas involves the use of comprehensive demographic information, normally U.S. Census Bureau data. For this EIR/EA, census data for the Year 1990 and Year 2000 were used to identify minority and low-income populations. Supplemental data from SACOG were used to augment the Year 1990 and Year 2000 census data, as appropriate. The census tract level data, instead of the census block group or block level, was used because it provides the best combination of demographic accuracy and data accessibility for the Study Area. Once identified, the locations of EJ population areas are then compared to areas in which environmental and socioeconomic impacts are predicted to occur to determine if these communities will be disproportionately affected compared to other nearby non-EJ population areas. If disproportionate impacts were identified in this process, avoidance or minimization measures to alleviate those impacts to those communities would be recommended.

In order for a locale to be considered a potential EJ population area of concern, either the minority or low-income population of the study area must be "meaningfully greater" than that of the study area. Any Census tracts with a percentage of residents above the minority or low-income thresholds established for the Study Area are identified as potential EJ population areas of concern.

2.7.2 Affected Environment

Minority Populations

According to the U.S. Bureau of Census, minority populations are those groups that include Black or African Americans, American Indians or Alaskan Natives, Asians, Native Hawaiian or Other Pacific Islanders, Hispanic or Latinos, and other races. These population categories were used to determine the minority percentage for each census tract in the Study Area.

A census tract with a minority population greater than the average minority population of the Study Area would be considered to be an EJ population area of concern. Minority populations are present in the Study Area, and Executive Order 12898 directs the project's government sponsors to determine whether the project could subject these populations to disproportionate adverse impacts. Census tract 70.04 has an 8 percent

higher population of Black or African American residents than the city and 13 percent higher population than Sacramento County. In census tract 70.04, there is an 8 percent higher percentage of Hispanic/Latino residents than the city and 14 percent higher population of Hispanic/Latino's than the County. Census tracts 70.07,70.11,70.12,70.13 and 70.14 all had higher than average populations of Hispanic/Latino and residents of one or more races, however, the project will not have a disproportionate impact on any minorities.

2.7.3 Environmental Consequences

As discussed above, there are minority populations found in the Study Area. However, because the proposed project would alter an existing freeway and have a minimal effect on the surrounding communities, it does not have the potential to cause local impacts. Other potential impacts to neighboring populations can include noise and air quality, however, noise and air quality impacts are distributed evenly through the Study Area and are not concentrated in any area of minority residents. Noise abatement measures are being assessed for most of the neighborhoods along the freeway, in both EJ population areas and non-EJ population areas. The proposed project is not expected to have significant impacts on air quality in the region; no adverse air quality impacts would exclusively affect EJ population areas. Impacts related to construction would similarly occur all throughout the project area, adjacent to both EJ population and non-EJ population areas.

2.7.4 Avoidance, Minimization, and/or Mitigation Measures

Based on the above discussion and analysis, the proposed project will not cause disproportionately high and adverse effects on any minority or low-income populations, as discussed in Executive Order 12898 regarding EJ. Thus, no avoidance, minimization, or mitigation measures are necessary.

2.8 Utilities and Public Services, Emergency Services

2.8.1 Affected Environment

Utilities and Public Services

Designated utility corridors and easements are located in the study area. Utilities such as water, storm drains, sanitary sewer systems, gas, and electrical lines traverse the study area.

Water Supply and Distribution

According to Sacramento County's General Plan, 28 public and private water purveyors are responsible for the treatment and distribution of surface and groundwater as well as securing surface water rights within the county. The county's water purveyors include dependent water districts, autonomous water districts, cities, and private and mutual water companies. Drinking water is supplied by various agencies, including the City of Sacramento's Department of Utilities (85 percent from the American River and 15 percent from groundwater), Sacramento County Department of Water Resources, Arden Water Service, and Southern California Water Company.

Flood Control

The Sacramento Area Flood Control Agency (SAFCA) has been charged with the responsibility of providing the Sacramento area with flood protection from the American and Sacramento rivers. Storm water drainage and flood control services in the study area are provided by the Sacramento County Stormwater Program within the Water Resources Department.

Wastewater Collection and Treatment

Sacramento Regional County Sanitation District (SRCSD), through its contributing agencies such as the Sacramento County Sanitation District, provides sewer and wastewater collection, conveyance, and treatment services in the urbanized areas of the county. Wastewater from the City of Sacramento is routed to the Sacramento Regional County Treatment Plant where it receives primary and secondary treatment. The study area is serviced by the Sacramento County Sanitation District and the City of Sacramento's Department of Utilities.

Solid Waste Disposal

Solid waste disposal and recycling services in the study area are provided by the City of Sacramento within the city's jurisdictional limits, and the Sacramento County Department of Waste Management and Recycling Division (WMRD). The City of Sacramento services all residential and a third of the commercial customers within the city, transporting the waste initially to a transfer station and then to the Lockwood Landfill in Sparks, Nevada. Private franchised haulers service the remaining commercial customers in the City of Sacramento and dispose of the waste at various facilities including the Sacramento County Kiefer Landfill, the Yolo County Landfill, L and D Landfill, Florin Perkins Landfill, and private transfer stations. WMRD disposes of their collected waste at Kiefer Landfill, which is the primary municipal solid waste disposal facility in Sacramento County. Kiefer Landfill is also the only landfill facility in the county permitted to accept household waste from the public.

Natural Gas and Electricity

The Sacramento Municipal Utility District (SMUD) provides electricity in the county and study area, while Pacific Gas and Electric Company (PG&E) provides gas.

Telecommunications

Multiple companies provide telecommunication services in the Sacramento area, offering landline and cellular services, cable television, and internet connectivity. The primary telecommunications service providers in the Sacramento area are AT&T, Sprint, Comcast, SureWest, Electric Lightwave, Inc. and Strategic Technologies, Inc.

Emergency Service Providers (Police, Fire, Ambulance)

Police

Primary public safety services are provided by the Sacramento Police Department within the City of Sacramento and by the Sacramento County's Sheriff Department in the unincorporated areas. The California Highway Patrol also provides public safety services along the freeways.

Fire Districts

Fire protection within the project area is provided by the City of Sacramento.

Hospitals

The project area is served by these major medical hospital facilities in the greater project area:

- Methodist Hospital of Sacramento
  7500 Hospital Drive
  Sacramento, CA 95823

- Sutter Memorial Hospital
  1726 28th Street
  Sacramento, CA 95816

2.8.2 Environmental Consequences

Access routes for emergency vehicles would not be affected by the proposed project. The proposed project would provide a benefit in terms of travel time on the freeway. Temporary impacts include a potential for delay during the construction of the project.

2.8.3 Avoidance and Minimization Measures

A transportation management plan to address congestion will be implemented during construction that will reduce the traffic impacts during construction. The freeway and ramps will remain open during construction. All work affecting traffic lanes will be at night and off-peak hours. Stage construction and temporary concrete barriers will be required. Construction of viaducts and other structures will require detouring/shifting traffic around the areas under work. Falsework for bridge span construction will require occasional facility closure, as well as horizontal and vertical clearance reduction for the duration of the bridge work. A public awareness campaign, portable changeable message signs, and Construction Zone Enhanced Enforcement Program (COZEEP) will be included in the project. Lane closure charts will be developed during the plans specifications and estimates (PS&E) phase of the project.

2.9 Transit, Bicycles, and Pedestrians

2.9.1 Regulatory Setting

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

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

2.9.2 Affected Environment

Operating agencies providing common carrier or public transportation services within or through the Corridor are Sacramento Rapid Transit (RT), Yolo County Transportation District (Yolobus), Yuba-Sutter Transit District, Amtrak, and Greyhound. Public transportation to the Airport consists largely of taxi, shared-ride van services, some dedicated hotel shuttles, and one public bus route (Yolobus).

2.9.2.1 Transit

Bus Service

RT runs the primary bus network for the metropolitan area. RT buses carry about three-quarters of all transit trips in Sacramento County on 99 bus routes. Altogether, the bus routes carry an average of 67,000 passenger trips each weekday. To handle this demand, RT has an existing fleet of 279 buses powered by compressed natural gas and 17 shuttle vans. RT bus routes with stops in the project area are the #11 Truxel Road, #13 Northgate, #14 Norwood, #86 San Juan/Silver Eagle, #87 Howe, and #88 West El Camino. These services connect from some locations in North or South Natomas to Downtown Sacramento or to the Arden/Del Paso Station.

Light Rail Transit Service

RT currently operates 76 light rail vehicles over 37.4 miles of track serving 47 stations and carries over 50,000 passengers on a typical weekday.

Other

The Yolo County Transit District provides Yolobus service for West Sacramento, Davis, Woodland, and other communities in Yolo County with 19 local fixed and express bus routes. Daily ridership on the system is about 3,000 trips.

Paratransit Inc., with funding provided by RT, provides services for the mobility-impaired population that cannot use conventional fixed-route transit. A fleet of 104 small bus vehicles handles the 2,100 daily paratransit trips—about 2.5 percent of all transit trips.

Greyhound offers intercity and interstate service through its station in Downtown Sacramento at 715 L Street, with several dozen schedules providing direct or connecting service to many cities in California, as well as interstate service.

Yuba-Sutter Transit provides commuter service on SR 99, SR 70, and I-5 but with no stops outside of Downtown Sacramento.

Amtrak provides service from the Rail station at I Street and Third. This station serves the Californian Zephyr, Capital Corridor, Coast Starlight, and San Joaquin train routes.

2.9.2.2 Bicyclists

The bike path on San Juan Road, beginning at Azevedo Road and ending at Airport Boulevard will be perpetuated. The City of Sacramento is proposing to extend the bicycle lane to West El Camino Avenue.

2.9.3 Environmental Consequences

2.9.3.1 Transit

Transit ridership is anticipated to increase as a result of the project. Based on the Traffic Report and data from previously completed bus/carpool lane projects, the proposed project could greatly improve travel time for commuter buses. Implementation of bus/carpool lanes on I-5 would allow buses to bypass congested mixed flow traffic lanes, resulting in improved travel times during peak commuting periods. As growth in the region continues, the need for additional public transit services will also continue to increase.

During construction, transit operations may experience delays due to construction activities.

2.9.3.2 Bicyclists

During construction, bicycle access to the bridge and thus the bike lane on the other side of the bridge will be constrained.

2.9.4 Avoidance and Minimization Measures

Transportation management measures will be in place to minimize impacts on emergency services and transit operators. All work affecting traffic lanes will be at night and off-peak hours. Stage construction and temporary concrete barriers will be required. Construction of viaducts and other structures will require detouring/shifting traffic around the areas under work. Falsework for bridge span construction will require occasional facility closure, as well as horizontal and vertical clearance reduction for the duration of the bridge work. A public awareness campaign, portable changeable message signs, and Construction Zone Enhanced Enforcement Program (COZEEP) will be included in the project. Lane closure charts will be developed during the PS&E phase of the project.

2.10 Traffic Capacity and Congestion

Traffic simulation software was used to develop traffic operations models of the AM and PM peak periods for both peak and off-peak directions. Existing conditions models were constructed from geometric data (aerial photographs, field observations, etc.), traffic control data (ramp meter signal timing plans), and traffic flow data (traffic counts, travel time measurements, field observations, etc.). The existing conditions models were calibrated and validated to observed traffic volumes, travel time, and queues.

2.10.1 Affected Environment

Existing Traffic Conditions

Under existing conditions, the main bottleneck in the morning is on southbound I-5 at the Garden Highway off-ramp although a smaller bottleneck exists at the SR 99 on-ramp from I-5. The primary bottleneck in the

evening on eastbound I-80 is currently at Northgate Boulevard. The Level of Service is an indicator of the existing traffic conditions.

Level of Service

Level of service (LOS) is a qualitative measure of traffic operating conditions as perceived by drivers, which varies from LOS A (un-congested conditions) to LOS F (congested conditions). Table 12 describes the LOS thresholds from the *Highway Capacity Manual* (HCM) for freeway sections.

Table 12 Freeway Mainline and Ramp Junction/Weave Section LOS Thresholds

Level of Service	Description	Density (vplpm)[1]	
		Mainline (Basic)	Ramp / Weave
A	Free-flow speeds prevail. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream.	≤ 11	≤ 10
B	Free-flow speeds are maintained. The ability to maneuver with the traffic stream is only slightly restricted.	> 11 to 18	> 10 to 20
C	Flow with speeds at or near free-flow speeds. Freedom to maneuver within the traffic stream is noticeably restricted, and lane changes require more care and vigilance on the part of the driver.	> 18 to 26	> 20 to 28
D	Speeds decline slightly with increasing flows. Freedom to maneuver with the traffic stream is more noticeably limited, and the driver experiences reduced physical and psychological comfort.	> 26 to 35	> 28 to 35
E	Operation at capacity. There are virtually no usable gaps within the traffic stream, leaving little room to maneuver. Any disruption can be expected to produce a breakdown with queuing.	> 35 to 45	> 35 to 43[2]
F	Represents a breakdown in flow.	> 45	> 43[2]

Notes: 1. Density is reported in vehicles per lane per mile (vplpm). The HCM uses passenger cars per lane per mile to set the LOS thresholds; however, the relatively low percentage of trucks in the study area makes the density as measured in vplpm similar to pcplpm.

2. The maximum density for ramp junctions under LOS E is not defined in the Highway Capacity Manual. The maximum density for weaving sections of 43 vplpm was assumed to apply to ramp junctions.

Source: *Highway Capacity Manual* (Transportation Research Board, 2000)

The PM peak period model has congested conditions on I-80 from the I-5 NB on-ramp through the Norwood Avenue on-ramp. The bottlenecks are located at the grades on Northgate Boulevard and Norwood Avenue. Northbound I-5 has only minor congestion at the I-80 off-ramp (queue back-up from eastbound I-80) and at Richards Boulevard, which is the bottleneck location that controls the amount of traffic entering the Study Area.

Table 13 AM/PM Peak-Hour Mainline Analysis for Existing Conditions

Location		Type[1]	Volume	Speed	LOS/Density[2]
AM Peak-Hour Mainline Analysis for Existing Conditions					
SB I-5	Airport Boulevard to SR 99	Basic	2,448	63	C / 21
	SR 99 to Del Paso Rd	Weave	4,944	62	D / 28
	Del Paso Rd to Arena Boulevard	Weave	6,127	50	**F / 62**
	Arena Boulevard to I-80	Basic	6,792	44	**F / 92**
	I-80 to W El Camino Ave	Merge[3]	6,928	59	**F / 65**
	W El Camino Ave to Garden Hwy	Weave	8,363	36	**F / 83**
	Garden Hwy to Richards Boulevard	Weave	7,988	50	D / 34
WB I-80	Norwood Ave to Northgate Boulevard	Basic	5,714	58	**F / 48**
	Northgate Boulevard to Truxel Rd	Basic	5,082	64	C / 23
	Truxel Rd to I-5	Weave	5,367	64	C / 23
	I-5 to W El Camino Ave	Basic	3,155	64	B / 18
	W El Camino Ave to Sacramento River	Basic	3,522	63	C / 20
PM Peak-Hour Mainline Analysis for Existing Conditions					
NB I-5	Richards Boulevard to Garden Hwy	Weave	7,394	46	**F / 70**
	Garden Hwy to W El Camino Ave	Weave	9,110	61	E / 39
	W El Camino Ave to I-80	Basic	8,042	59	E / 38
	I-80 to Arena Boulevard	Weave	7,227	63	C / 28
	Arena Boulevard to Del Paso Rd	Weave	6,273	62	D / 32
	Del Paso Rd to SR 99	Weave	5,257	62	D / 32
	SR 99 to Airport Boulevard and the San Juan Road Overcrossing	Basic	2,742	63	C / 23
EB I-80	Sacramento River to W El Camino Ave	Basic	3,298	64	C / 18
	W El Camino Ave to I-5	Diverge[3]	2,982	64	B / 19
	I-5 to Truxel Rd	Weave	5,149	57	**F / 82**
	Truxel Rd to Northgate Boulevard	Basic	4,701	24	**F / 78**
	Northgate Boulevard to Norwood Ave	Basic	5,436	61	D / 31

Notes: Bold and underline font indicate LOS F conditions.
1. Freeway analysis types are ramp merge (on-ramp), ramp diverge (off-ramp), weaving section (on-ramp to off-ramp), or basic freeway segment (for lane add or drop more than 2,500 feet from adjacent ramp).
2. Density is reported in vehicles per lane per mile.
3. The distance between the W El Camino Ave EB on-ramp and I-5 off-ramp is about 3,000 feet, so no basic freeway segment exists. Instead, the worst ramp junction (merge or diverge) LOS is shown.
Source: Fehr & Peers, 2008a

The AM peak period model shows congested LOS F conditions on I-5 from Del Paso Road to the Garden Highway on-ramp. The bottleneck is at the Garden Highway interchange. The lane drop to the off-ramp and, to a lesser extent, the upgrade to the American River Bridge reduces the mainline capacity.

Westbound I-80 has LOS E/F conditions between Norwood Avenue and Northgate Boulevard, which indicates that the freeway is operating at capacity. This is the bottleneck location that controls the amount of traffic entering the study area.

The PM peak period model has congested conditions on I-80 from the I-5 northbound on-ramp through the Norwood Avenue on-ramp. The bottlenecks are located at Northgate Boulevard and Norwood Avenue. Northbound I-5 has only minor congestion at the I-80 off-ramp (queue back-up from eastbound I-80) and at Richards Boulevard, which is the bottleneck location that controls the amount of traffic entering the study area.

2.10.2 Environmental Consequences

Future Year Model Development

Future year traffic volume forecasts are based on the SACOG land use and roadway network projections for year 2035 conditions. New land use and roadway network projects were incorporated into the updated sub-area model to forecast changes in future travel demands and travel patterns.

The traffic model showed that the build alternatives produced less delay, greater speeds and improved travel times when compared with the No Build Alternative, however; performance margins between all alternatives were small. The build alternatives out performed the No Build Alternative in years 2030 and 2040 by a nominal amount, but did not perform as well as expected in design year 2020. The small improvements were a result of the bottleneck conditions that exist outside of the project limits which limited traffic flow from entering the system, therefore affecting the traffic model results. Eventual highway improvements to the bottlenecks on each quadrant of the interchange would remove the bottlenecks and permit the build alternatives to reach their maximum potential.

Even without bottleneck improvements, the build alternatives out performed the No Build Alternative throughout most of the design life of the project. The primary bottleneck in the evening on eastbound I-80 is currently at Northgate Boulevard. The improved performance was a result of adding HOV direct connectors and replacing the existing loop connector in the southeast quadrant with a multilane flyover connector. Elimination of the existing connector would permit more efficient weave/merge movements and improve safety on eastbound I-80 under the I-5 overcrossing. The build alternative improvements are expected to reduce sideswipe, hit object, and overturn accidents for interchange loop ramps.

The 2040 conditions model shows a new bottleneck on northbound I-5 at SR 99, where the freeway splits and the proposed I-5 HOV lane ends. As a result of this bottleneck, traffic would queue back through downtown Sacramento on NB I-5 and past the Sacramento River Bridge on EB I-80.

Table 14 shows the peak hour mainline and ramp volumes along with the capacity of the roadway for the years 2005, 2020, 2030 and 2040. The bold numbers show where the volumes exceed capacity. The volumes shown are not the entire demand; they are only the vehicles actually able to use the freeway at peak time. Currently, there are more travelers that want to use the freeway than there is capacity on SB I-5 between Arena Boulevard and the interchange of I-5 and I-80.

Table 14 Peak Hour Mainline and Ramp Volumes and Capacity

Location	AM				PM				Capacity	
	2005	**2020**	**2030**	**2040**	**2005**	**2020**	**2030**	**2040**	**Now**	**Future**
EB 80 Mainline *W El Camino to 5/80*	1931	3015	3866	4640	3015	4320	5153	5993	6000	11500 (w/HOV)
EB 80 to SB 5	86	98	148	157	132	179	214	249	1500	1500
EB 80 to NB 5	531	776	941	1117	1040	**1381**	**1586**	**1832**	1300	3000 (w/Mix Flow)
WB 80 Mainline *Truxel to 5/80*	5192	5137	5748	7245	5392	5768	8113	9116	10000	11500 (w/HOV)
WB 80 to SB 5	2354	2569	2890	**3042**	2783	**3226**	**3797**	**4113**	3000	4500 (w/HOV)
WB 80 to NB 5	708	850	951	1053	877	1094	1252	1408	1500	1500
NB 5 Mainline *W El Camino to 5/80*	5019	6573	**8251**	**9368**	8221	**9810**	11517	**12498**	8000	11500 (w/HOV)
NB 5 to EB 80	1953	2303	**2859**	**3109**	2698	2953	**3505**	**3688**	3000	4500 (w/HOV)
NB 5 to WB 80	87	107	122	137	98	156	197	239	1300	1300
SB 5 Mainline *Arena to 5/80*	**7065**	**8589**	**10077**	**11928**	4108	5792	**7487**	**8717**	6000	13500 (w/HOV)
SB 5 to EB 80	844	940	1009	1078	749	937	1077	1211	1400	1400
SB 5 to WB 80	955	1214	1389	1574	509	782	984	1178	1500	3000

Table 15 Peak Hour travel time for years 2020, 2030 and 2040

Route	Type	No Build	Alt 1A	Alt 1B	Alt 1C	Route	Type	No Build	Alt 1A	Alt 1B	Alt 1C
2020 AM Peak-Hour Travel Time						**2020 PM Peak-Hour Travel Time**					
Southbound I-5:	All	13.5	8.8	14.9	14.5	Northbound I-5:	All	6.1	7.2	7.2	7.5
SR 99 to Richards Boulevard	HOV	12.9	5.4	14.1	13.8	Richards Boulevard to SR 99	HOV	6.1	7.2	7.2	7.5
Westbound I-80:	All	4.6	4.6	4.6	4.6	Eastbound I-80:	All	4.9	4.7	4.7	4.7
Norwood Ave to W El Camino Ave	HOV	4.6	4.6	4.6	4.6	W El Camino Ave to Norwood Ave	HOV	4.8	4.7	4.7	4.7
Westbound I-80 to Southbound I-5	All	8.7	6.3	5.7	5.7	Northbound I-5 to Eastbound I-80:	All	6.8	7	7	7
Norwood Ave to Richards Boulevard	HOV	8.6	5.7	5.4	5.4	Richards Boulevard to Norwood Ave	HOV	6.2	7	7	7
2030 AM Peak-Hour Travel Time						**2030 PM Peak-Hour Travel Time**					
Southbound I-5:	All	12.8	12.9	12.9	12.7	Northbound I-5:	All	16.6	14.8	14.3	14.4
SR 99 to Richards Boulevard	HOV	5.8	5.4	5.4	5.6	Richards Boulevard to SR 99	HOV	8.8	8.6	8.5	8.5
Westbound I-80:	All	13.9	4.6	4.6	4.7	Eastbound I-80:	All	7.6	6.7	6.1	5.8
Norwood Ave to W El Camino Ave	HOV	6.7	4.6	4.6	4.6	W El Camino Ave to Norwood Ave	HOV	5	5.1	4.8	4.9
Westbound I-80 to Southbound I-5:	All	23.7	10.4	10.8	11	Northbound I-5 to Eastbound I-80:	All	9.8	7.5	7.2	7.6
Norwood Ave to Richards Boulevard	HOV	18.4	5.7	5.7	5.8	Richards Boulevard to Norwood Ave	HOV	7.4	6.5	6.4	6.5
2040 AM Peak-Hour Travel Time						**2040 PM Peak-Hour Travel Time**					
Southbound I-5:	All	13.1	13.6	13.2	13.1	Northbound I-5:	All	15.4	16.6	17.5	16.9
SR 99 to Richards Boulevard	HOV	5.5	5.3	5.3	5.4	Richards Boulevard to SR 99	HOV	8	8.7	8.8	8.8
Westbound I-80:	All	20.3	9.1	9.1	9.1	Eastbound I-80:	All	10.5	8.5	8.4	8
Norwood Ave to W El Camino Ave	HOV	8.1	5.1	5.1	5.1	W El Camino Ave to Norwood Ave	HOV	5.6	5.4	5.5	5
Westbound I-80 to Southbound I-5:	All	30.5	17.5	17.3	16.7	Northbound I-5 to Eastbound I-80:	All	9.4	9.9	9.9	10
Norwood Ave to Richards Boulevard	HOV	21.3	6.2	6.2	6.2	Richards Boulevard to Norwood Ave	HOV	7.1	6.9	6.9	6.9

2020 AM Peak Period

Table 15 shows the average peak-hour travel time and speed for the project alternatives. Under the No Build Alternative, the southbound I-5 commute time from SR 99 to Richards Boulevard would be 13.5 minutes in

2020. With the additional lane from Arena Boulevard to Garden Highway, Alternative 1A would have an improved travel time of about 9 minutes; a savings of 4.5 minutes. Although an additional lane would be provided from I-80 to Garden Highway, the travel time under Alternatives 1B and 1C would be longer (14.5 to 15.0 minutes) compared to Alternative 1A since one less lane would be provided on I-5 at I-80.

The travel times for Alternatives 1B and 1C are shown to be longer than the No Build Alternative because the higher Build Alternative forecasts are used. With increased capacity on southbound I-5 at I-80 more traffic can reach I-5 south of I-80, causing more congestion, which leads to longer travel times from westbound I-80 to southbound I-5. Alternatives 1A, 1B, and 1C would have shorter average travel times for all vehicles for the westbound to southbound movement by about 4 minutes. Alternatives 1B and 1C would have the shortest travel times due to capacity constraints on southbound I-5 at I-80, which would improve traffic flow on I-5 south of I-80.

2020 PM Peak Period

The lower travel times for the No Build Alternative is likely related to the lower demand volumes, which results in less congestion than under the build alternatives, particularly on northbound I-5 between Richards Boulevard and Garden Highway. The HOV direct connector under Alternatives 1A, 1B, and 1C would reduce overall travel times by 1.3 minutes along the northbound to eastbound path.

2030 AM Peak Period

Under the No Build Alternative, the commute time from westbound I-80 at Norwood Avenue to southbound I-5 at Richards Boulevard would be about 24 minutes. For Alternatives 1A and 1B, the travel time would improve to about 11 minutes. For HOVs under Alternatives 1A, 1B, and 1C, the average travel time would improve to less than 6 minutes.

2030 PM Peak Period

Under the No Build Alternative, the commute time from northbound I-5 at Richards Boulevard to eastbound I-80 at Norwood Avenue would be 9.8 minutes. For the build alternatives, the travel time would be lower by 2 to 2.5 minutes compared to the No Build Alternative.

2040 AM Peak Period

Under the No Build Alternative, the travel time from westbound I-80 at Norwood Avenue to southbound I-5 at Richards Boulevard would be about 30 minutes. Alternatives 1A, 1B, and 1C would have travel times less than 18 minutes, but the travel time for HOVs would be much improved to less than 7 minutes with the median direct connectors.

2040 PM Peak Period

Under the No Build Alternative, the commute time from northbound I-5 at Richards Boulevard to eastbound I-80 at Norwood Avenue would be 9.4 minutes. For Alternatives 1A, 1B, and 1C, the travel time would be higher by about half a minute due to higher travel times for northbound I-5. For HOVs, the average travel time on this path would be similar for all alternatives although Alternatives 1A, 1B, and 1C would have the lowest travel times.

2.10.3 Avoidance, Minimization, and/or Mitigation Measures

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

2.11 Visual/Aesthetics

2.11.1 Regulatory Setting

NEPA establishes that the federal government use all practicable means to ensure all Americans safe, healthful, productive, and *aesthetically* (emphasis added) and culturally pleasing surroundings [42 U.S. Code 4331(b)(2)]. To further emphasize this point, the Federal Highway Administration in its implementation of the NEPA [23 U.S. Code 109(h)] directs that final decisions regarding projects are to be made in the best overall public interest taking into account adverse environmental impacts, including among others, the destruction or disruption of aesthetic values.

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

2.11.2 Affected Environment

The assessment of visual impacts is based on several factors; existing visual qualities, viewer exposure and the level of concern the viewer has to change in the project area. Travelers include commuters, truck drivers, and others who drive to recreation areas, shopping centers and residential communities. These individuals view the project corridor as it is seen from the highway. Their trips may consist or one or more links between interchanges or the entire span of the corridor.

Neighbors include observers from adjacent land uses such as shopping centers, office buildings, fast food restaurants or residential areas. Their views vary greatly by location, elevation relative to the highway and density of existing vegetation.

Land uses adjacent to the highway right-of-way are varied and include urban residential, commercial, office complex, industrial and some remaining agricultural fields. There are also various on/off-ramps, interchanges, crossing support structures, and frontage roads adjacent to the highway which are a part of the visual environment. Throughout most of the project limits the traveled way is at grade with the surrounding neighborhoods. Developers installed several of the existing soundwalls located within the project limits. The right-of-way is landscaped with trees and shrubs and mowed seasonally.

Figure 10 Visual Simulation of Proposed Flyover

2.11.3 Environmental Consequences

I-5/I-80 Flyovers: EB 80 to NB 5 and NB 5 to EB 5

These proposed flyovers are typical of major interchanges throughout California. They would be similar in construction to the existing flyovers at I-80 and US 50, approximately 4 miles southwest of the project site. They will be approximately 65 feet tall at their highest points. They are at their closest proximity, to each other and to any adjacent neighborhoods, in the southeast quadrant of the existing cloverleaf interchange. There is an existing row of trees along the right-of-way between the existing neighborhood and the new flyovers. This line of trees, approximately 40 feet high, will not be disturbed. The greatest visual impact is the removal of a large number of trees in the two south quadrants for the construction of the flyovers. The construction of the flyovers will impact approximately four acres of mature vegetation. However, all disturbed areas will be replanted with trees, mulch and mowable grasses, and irrigation will also be installed. The long-term visual integrity of the landscape will be maintained.

San Juan Road Bridge

The bridge is being reconstructed to allow adequate clearance for the connection of the eastbound I-80 HOV lane. The new bridge location is approximately eight feet higher than the existing structure. The edges of the bridge will have a two to three foot concrete sidewall with a 6.5 foot chain link fence above. The chain link should have a black vinyl coating to minimize visual effect. The increased height will not be recognizable to the traveling public.

Retaining Walls

The retaining walls will be constructed in conjunction with the flyover abutments, reconstruction of the San Juan Bridge and one independent wall below the traveled way. The retaining walls will have aesthetic treatments. A plain concrete structure can become visually acceptable by adding texture, color, or enhancing the form. The selected aesthetic treatments will be compatible both with their surroundings and with the corridor.

Median Lanes and Barriers

Approximately 19 acres of existing mowed median will become the new asphalt HOV lanes. Metal beam guard railing (30 inches high) will be partially replaced on I-5, between PM 25.2 and 27.8. The mowed median will be partially covered over with asphalt for new traveled way. There will still be vegetation in the median. Heat and glare will increase with the additional concrete and asphalt. The concrete safety barriers would have an aesthetic treatment to compensate for the additional height and visual impact. Integral color or staining could be added to reduce glare and visual boredom.

Hard Surface

The project construction will remove 19 acres of vegetated, permeable surface and replace it with asphalt concrete.

2.11.4 Avoidance and Minimization Measures

All disturbed areas will be replanted with trees, shrubs, grasses, and new irrigation will be installed.

The concrete retaining walls will have an aesthetic treatment to compensate for the additional height and visual impact. Integral brown color will be added to reduce glare and visual boredom. The chain link fence will have a dark coating to make it inconspicuous.

With the above project features, there would be no negative impacts to the visual environment.

2.11.5 Mitigation Measures

Nineteen acres of new trees, shrubs and irrigation systems will be installed between the property line and the new auxiliary lanes as compensation for the loss of vegetation and highway planting.

2.12 Cultural Resources

2.12.1 Regulatory Setting

"Cultural resources" as used in this document refers to historic and archaeological resources, regardless of significance. Laws and regulations dealing with historic and archaeological resources include the following:

The National Historic Preservation Act of 1966, as amended, (NHPA) sets forth national policy and procedures regarding historic properties, defined as districts, sites, buildings, structures, and objects included

in or eligible for the National Register of Historic Places. Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on such properties and to allow the Advisory Council on Historic Preservation the opportunity to comment on those undertakings, following regulations issued by the Advisory Council on Historic Preservation (36 CFR 800). On January 1, 2004, a Section 106 Programmatic Agreement (PA) between the Advisory Council, the FHWA, the State Historic Preservation Officer (SHPO), and Caltrans went into effect for Caltrans projects, both state and local, with FHWA involvement. The PA implements the Advisory Council's regulations, 36 CFR 800, streamlining the Section 106 process and delegating certain responsibilities to Caltrans. The FHWA's responsibilities under the PA have been assigned to Caltrans as part of the Surface Transportation Project Delivery Pilot Program (23 CFR 773) (July 1, 2007).

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

Affected Environment

Caltrans prepared a Historic Property Survey Report (HPSR) in March 2008 in accordance with the Section 106 PA. The HPSR is bound separately and available at the Caltrans District Office, 2800 Gateway Oaks Dr. Sacramento, CA.

The Area of Potential Effects (APE) for the project includes ground disturbance from existing edge of pavement varying throughout the project limits, from approximately 10 to 60 feet and the locations for the proposed sound walls and minor ground disturbing activities on adjacent property through temporary construction easements.

The vertical construction extent of the APE includes maximum proposed vertical cuts that will be approximately 14 feet below existing grade. The depth of the foundations for structures will be 6 to 10 feet below ground surface. The depth of the piles will be about 60 to 100 feet. The piles will be driven into the ground.

The APE was established to include all construction activities within Caltrans existing right-of-way and proposed construction easements for work proposed outside the right-of-way as well as the staging and storage areas. No pre-construction, construction, or post construction activities will occur outside the area that has been surveyed for archaeological resources. This includes staging, storage, and parking of equipment.

Various sources of information were reviewed for the cultural resource analysis, including:

- National Register of Historic Places.
- California Register of Historical Resources.
- California Inventory of Historic Resources.
- California Historical Landmarks.

- California Points of Historical Interest.
- State Historic Resources Commission.
- Caltrans Historic Highway Bridge Inventory.
- Archaeological Site Records (North Central Information Center, California State University, Sacramento).

Other sources consulted:

- Sacramento Preservation Roundtable, California State Library, Caltrans cultural resources library.

Public participation and Native American consultation are an essential element of the Section 106 compliance process. The following agencies, tribes, groups, and individuals were contacted for this project:

Agencies:

- California Office of Historic Preservation.
- Native American Heritage Commission.
- Sacramento Historical Society.

Tribes:

- Shingle Springs Band of Miwok Indians.
- United Auburn Indian Community of the Auburn Rancheria.

Individuals:

- Rose Enos.
- Jeff Murray, Cultural Resources Manager, Shingle Springs Band of Miwok Indians.
- Nicholas Fonseca, Chairperson, Shingle Springs Band of Miwok Indians.
- Jessica Tavares, Chairperson, United Auburn Indian Community of the Auburn Rancheria.

The record search resulted in the identification of two prehistoric sites and three historic-era cultural resources previously recorded within 0.25-miles of the project area. One previously recorded historic district (Reclamation District 1000, previously determined eligible for the National Register of Historic Places) was identified within the project area during archival research along with three contributing features, Natomas East Main Canal and East Levee, West Drainage Canal, and the Main Drainage Canal. These resources were located and reexamined during the course of the study. The three contributing features to the District were found to be outside the vertical APE. The elements of the District found within the project area were not considered to be contributing to the eligibility for the National Register of Historic Places (HRHP), therefore, the project would not impact the previously recorded historic properties.

The bridges located within the APE (bridge numbers 24-0206F, 0207L, -0207R, -0208L, -0208R, -0209F, -0209L, -0209R, -0210, -0238, -0249. -0319, -0332, -0350F, -0362) are Category 5 structures, not eligible for

the National Register of Historic Places, per the 2006 Caltrans Highway Bridge Inventory and require no further management.

The San Juan Road (P-34-884-H) is a presently used conventional two to four-lane road and has had substantial revisions since it was originally constructed. Four additional resources were located outside of the APE. The proposed project does not have the potential to affect these resources.

2.12.2 Environmental Consequences

No historic or eligible pre-historic properties will be affected by the project, thus, no environmental consequences will occur to any historic or pre-historic property as a result of this project.

2.12.3 Avoidance and Minimization Measures

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 are thought to be Native American, the coroner will notify the Native American Heritage Commission (NACH), who will then notify the Most Likely Descendent (MLD). At this time, the person who discovered the remains will contact the Caltrans District 3 Archaeologist 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 5097.98 are to be followed as applicable.

2.12.4 Mitigation Measures

No mitigation measures are required.

2.13 Physical Environment

2.14 Hydrology and Floodplain

2.14.1 Regulatory Setting

Executive Order 11988 (Floodplain Management) directs all federal agencies to refrain from conducting, supporting, or allowing actions in floodplains unless it is the only practicable alternative. FHWA requirements for compliance are outlined in 23 CFR 650 Subpart A.

To comply, the following must be analyzed:

- The practicability of alternatives to any longitudinal encroachments.
- Risks of the action.
- Impacts on natural and beneficial floodplain values.
- Support of incompatible floodplain development.
- Measures to minimize floodplain impacts and to preserve/restore any beneficial floodplain values affected by the project.

The base floodplain is defined as "the area subject to flooding by the flood or tide having a one percent chance of being exceeded in any given year." An encroachment is defined as "an action within the limits of the base floodplain."

2.14.2 Affected Environment

A Floodplain Hydraulics Study and a Floodplain Evaluation Report Summary were prepared for the proposed project in November 2006 and is available for review at 2800 Gateway Oaks Dr, Sacramento, CA 95833 during normal business hours.

The site is located in the Sacramento Valley. The Sacramento River Valley drains to the south. Immediately adjacent is the American River Valley, which drains to the west. The Natomas East Drainage Canal (DC) and the Natomas West DC both go through the area and meet at the Natomas Main DC. The Natomas Main DC then drains into the Sacramento River. The existing highway elevation in the project is approximately 10 feet.

An area north of 1-80 and between the East and West Natomas DC is designated as Zone A, a 100-year floodplain with no base flood elevations determined. The East Natomas DC passes under 1-5 and then combines with the West DC to form the Natomas Main DC passing under 1-80 and ending at the Sacramento River pumping station.

South of Garden Highway, the floodplains are designated by FEMA as Zone-AE, a 100-year floodplain with base flood elevations determined. The limits of the floodplain are confined within the banks of the channel, flooding the American River Parkway and Discovery Park south of Garden Highway Levee.

It was found that during the 100-yr flood, water surface elevations did not exceed the banks of the Natomas Main DC. Large volumes of storage are present in both the East and West DCs. This floodway is encroached transversely by I-5 between PM 26.81 to PM 27.24 and longitudinally along I-80 in Sacramento County between PM 2.1 to PM 3.2.

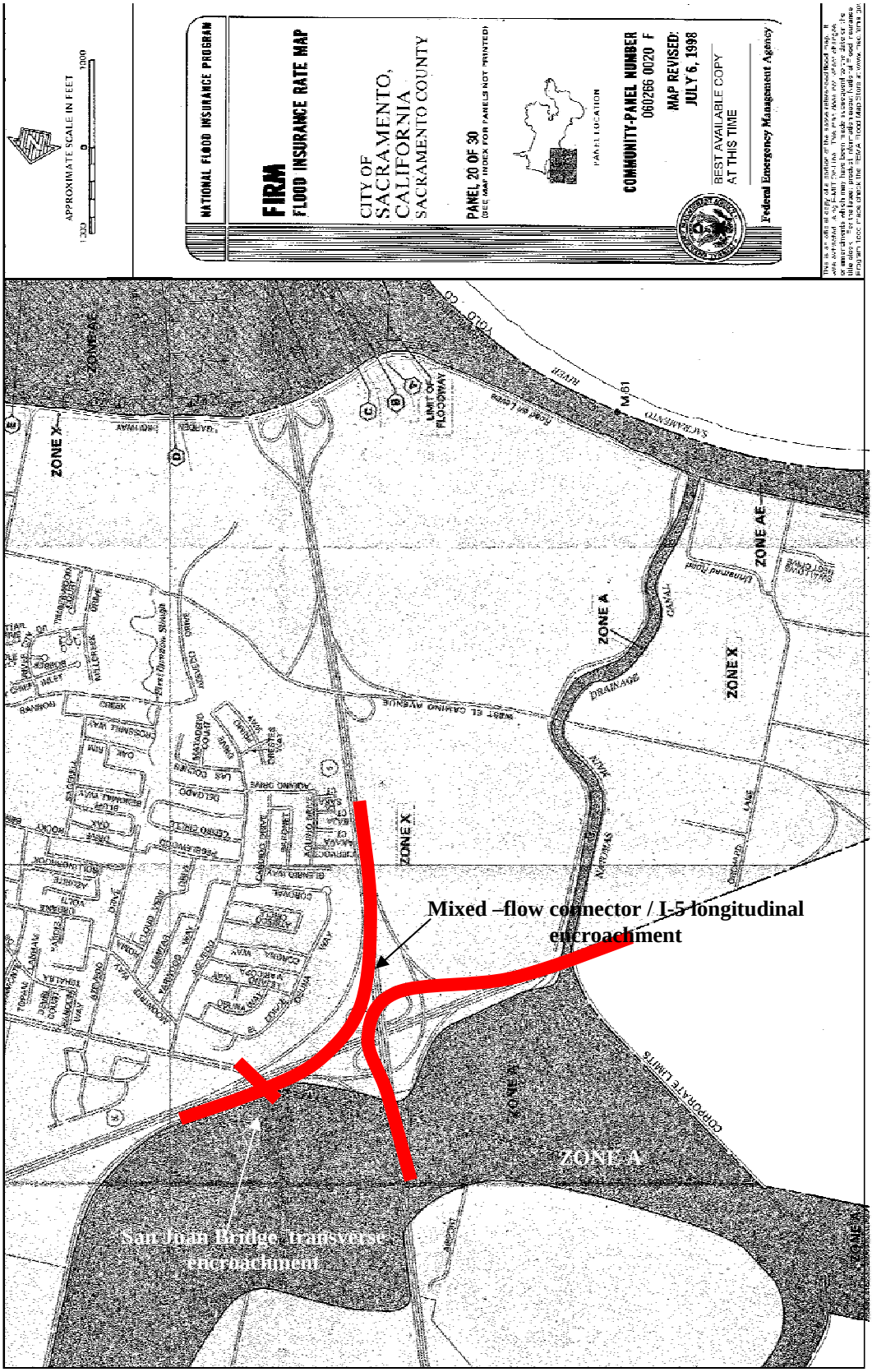
2.14.3 Environmental Consequences

As defined by FHWA, a floodplain encroachment is an action within the limits of the base floodplain. The floodway within the project area is encroached transversely by I-5 around the westbound I-80 to northbound I-5 connector and then longitudinally about one hundred feet. (See Figure 11) The proposed addition of a mixed flow connection between EB 1-80 to NB 1-5 encroaches upon the floodplain created by the East Natomas DC. The mixed-flow connector is a raised structure passing over 1-80 and San Juan Road and is

supported by an embankment from north of San Juan Rd to the end of the onramp. The west end of the San Juan Bridge replacement will encroach into the same floodplain. This construction will not reduce floodplain storage and will not impede flow, thus will not be a significant [1]impact on the FEMA regulatory floodplain.

[1] The term "significant" as used here is not used in the CEQA sense of the word.

Figure 11 FEMA Floodplain Map



2.14.4 Avoidance, Minimization, and/or Mitigation Measures

The mixed-flow connector and the San Juan Road Bridge will be designed to minimize their impacts on the floodplain. The project will not have a significant encroachment on the floodplain within the Study Area; thus, no mitigation measures are necessary.

2.15 Water Quality and Storm Water Runoff

2.15.1 Regulatory Setting

Section 401 of the Clean Water Act requires water quality certification from the State Water Resource Control Board (SWRCB) or a Regional Water Quality Control Board (RWQCB) when the project requires a Federal permit. Typically this means a Clean Water Act Section 404 permit to discharge dredge or fill into a water of the United States, or a permit from the Coast Guard to construct a bridge or causeway over a navigable water of the United States under the Rivers and Harbors Act.

Along with Clean Water Act Section 401, Section 402 establishes the National Pollutant Discharge Elimination System (NPDES) for the discharge of any pollutant into waters of the United States. The federal Environmental Protection Agency has delegated administration of the NPDES program to the SWRCB and the nine RWQCBs. To ensure compliance with Section 402, the SWRCB has developed and issued Caltrans an NPDES Statewide Storm Water Permit to regulate storm water and non-storm water discharges from Caltrans right-of-way, properties and facilities. This same permit also allows storm water and non-storm water discharges into waters of the State pursuant to the Porter-Cologne Water Quality Act.

Storm water discharges from Caltrans' construction activities disturbing one acre or more of soil are permitted under Caltrans' Statewide Storm Water NPDES permit. These discharges must also comply with the substantive provisions of the SWRCB's Statewide General Construction Permit. Non-Caltrans construction projects (encroachments) are permitted and regulated by the SWRCBs Statewide General Construction Permit. All construction projects exceeding one acre or more of disturbed soil require a Storm Water Pollution Prevention Plan (SWPPP) to be prepared and implemented during construction. The SWPPP, which identifies construction activities that may cause discharges of pollutants or waste into waters of the United States or waters of the State, as well as measures to control these pollutants, is prepared by the construction contractor and is subject to Caltrans review and approval.

Finally, the SWRCB and the RWQCBs have jurisdiction to enforce the Porter-Cologne Act to protect groundwater quality. Groundwater is not regulated by Federal law, but is regulated under the state's Porter-Cologne Act. Some projects may involve placement or replacement of on-site treatment systems (OWTS) such as leach fields or septic systems or propose implementation of infiltration or detention treatment systems which may pose a threat to groundwater quality.

2.15.2 Affected Environment

The proposed project is located within the jurisdictional boundaries of the Central Valley RWQCB.

Climate, Topography, and Soils

The climate in the project vicinity is characterized as Mediterranean with average temperatures ranging from lows in the 30's (Fahrenheit) in January to highs in the 90's in July. The average annual precipitation for the area is from 17 to 19 inches. The rainy season is defined as October 15th to April 15th.

The topography within the project area is generally flat to rolling hills. Elevation is four to 24 feet above mean sea level. South of the project, land use is primarily urban and to the north is farmland transitioning to urban land uses.

Soil in this area is most commonly Cosumnes silt loam. Levees, open and closed drains, and pumps have lowered the water table and altered the drainage of the Cosumnes soil. Permeability is slow in the Cosumnes soil and available water capacity is high. Plants roots are limited by the seasonal high water table in winter and early spring.

Surface Water

The project falls in Sacramento River Hydrologic Region (HR), Valley-American Hydrologic Unit (HU), Coon-American Hydrologic Area (HA) and Pleasant Grove Hydrologic Sub Area (HSA) 519.22. The average annual rainfall in this HSA is about 18.3 inches.

A Preliminary Drainage Report states that all surface water runoff from within the State's highway right-of-way drains to earthen drainage ditches along the shoulders of the highway where it eventually flows into either the East or West Natomas DC. The East Natomas DC travels under I-5 just north of the I-80 interchange, combining with the West Natomas DC to form the East Natomas Main DC. This canal passes under I-80 continuing to the Sacramento pumping plant. Excess water from these canals is pumped to the Sacramento River.

Quality of Existing Surface Waters

The portion of the Sacramento River within the Study Area, from the Colusa Basin Drain to the "I" Street Bridge, is listed in Section 303(d) of the Water Quality Control Plan[2] for the Central Valley Regional Water Board (Basin Plan) as impaired for water quality for the following constituents: Diazinon, Mercury, and Unknown Toxicity. No Total Maximum Daily Loads (TMDLs) have been established for these constituents to date. Potential sources for Diazinon and Mercury are Agriculture and Resource Extraction, respectively. The primary pollutant of concern for this project is sediment from the construction of cut and fill slopes.

Under the Porter-Cologne Water Quality Control Act, beneficial uses and water quality objectives are considered separately. Beneficial uses and water quality objectives to protect beneficial uses are to be

[2] Section 303(d) of the 1972 Federal Clean Water Act requires states to identify waterbodies that do not meet water quality objectives and are not supporting their beneficial uses. Each state must submit an updated list, called the 303(d) list, to the U.S. EPA every two years. In addition to identifying the waterbodies that are not supporting beneficial uses, the list also identifies the pollutant or stressor causing impairment, and establishes a priority for developing a control plan to address the impairment. The list also identifies waterbodies where 1) a TMDL has been approved by U.S. EPA and an implementation is available, but water quality standards are not yet met, and 2) waterbodies where the water quality problem is being addressed by an action other than a TMDL and water quality standards are not yet met. You may access information on California's Final 2006 Clean Water Act Section 303(d) List and related documents at http://www.waterboards.ca.gov/water_issues/programs/tmdl/303d_lists2006_epa.shtml.

established for all waters of the state, both surface (including wetlands) and groundwater. The Beneficial uses for this portion of the Sacramento River are:

AGR **Agricultural Supply**. Beneficial uses of waters used for farming, horticulture, or ranching, including, but not limited to, irrigation, stock watering, and support of vegetation for range grazing.

COLD **Cold Freshwater Habitat**. Beneficial uses of waters that support cold water ecosystems including, but not limited to, preservation and enhancement of aquatic habitats, vegetation, fish, and wildlife, including invertebrates.

MIGR **Migration of Aquatic Organisms**. Beneficial uses of waters that support habitats necessary for migration, acclimatization between fresh and salt water, or temporary activities by aquatic organisms, such as anadromous fish.

MUN **Municipal and Domestic Supply**. Beneficial uses of waters used for community, military, or individual water supply systems including, but not limited to, drinking water supply.

NAV **Navigation**. Beneficial uses of waters used for shipping, travel, or other transportation by private, military, or commercial vessels.

REC-1 **Water Contact Recreation**. Beneficial uses of waters used for recreational activities involving body contact with water where ingestion of water is reasonably possible. These uses include, but are not limited to, swimming, wading, water-skiing, skin and scuba diving, surfing, white water activities, fishing, and use of natural hot springs.

REC-2 **Non-contact Water Recreation**. Beneficial uses of waters used for recreational activities involving proximity to water, but not normally involving body contact with water where ingestion of water is reasonably possible. These uses include, but are not limited to, picnicking , sunbathing, hiking, beachcombing, camping, boating, tidepool and marine life study, hunting, sightseeing, and aesthetic enjoyment in conjunction with the above activities.

SPWN **Spawning , Reproduction , and Development**. Beneficial uses of waters that support high quality aquatic habitat necessary for reproduction and early development of fish and wildlife.

WARM **Warm Freshwater Habitat**. Beneficial uses of waters that support warm water ecosystems including, but not limited to, preservation and enhancement of aquatic habitats, vegetation, fish, and wildlife, including invertebrates.

WILD **Wildlife Habitat**. Beneficial uses of waters that support wildlife habitats including, but not limited to, the preservation and enhancement of vegetation and prey species used by wildlife, such as waterfowl.

2.15.3 Environmental Consequences

Erosion and increased turbidity and sedimentation may occur during and immediately following construction phase of the project due to vegetation removal. However, this can be lessened through appropriate Best Management Practices (BMPs).

There will be an increase in the impervious surface area due to widening of the shoulders and additional roadway being constructed. The contribution of the runoff volume from this project to the overall runoff volume in the area is relatively minor.

It is not expected that the increased volume of traffic as a result of this project will substantially impact the level of typical roadside pollution into local drainages. Permanent stormwater treatment BMPs such as biofiltration strips/swales and detention devices are being considered for this project, which will help to prevent pollution from entering nearby water-bodies.

The project will be adding new impervious surface, which will increase the velocity and volume of flow from the project area. Caltrans will improve stormwater quality by implementing drainage improvements and utilizing treatment BMPs. During construction of the project, surface water bodies within the project area may have temporary impacts, however, appropriate construction site BMPs will be used to minimize or avoid impacts. The project site will be re-vegetated to the maximum extent practicable in disturbed areas once construction is completed.

The proposed project will allow for greater traffic volumes in the project area, however the impact of additional aerially deposited particles on the receiving water quality is not expected to be substantial. With the implementation of permanent treatment BMPs using technologically advanced and alternative treatment devices, the project as planned will not result in the creation of a substantial source of additional polluted runoff but rather is expected to improve storm water quality.

2.15.4 Avoidance and Minimization Measures

The SWRCB has issued Caltrans a Statewide NPDES Permit (Board Order 99-06-DWQ). This permit regulates the storm water and non-storm water discharges associated with project construction activities and discharges associated with normal maintenance and operations of Caltrans facilities. The permit also serves as a State of California Waste Discharge Requirement. Compliance with this permit requires that the appropriate BMPs are employed that achieve the performance standards of Best Available Technology Economically Achievable/Best Conventional Pollutant Control Technology to reduce or eliminate storm water pollution. To limit any sediments and pollutants from impacting drainages as well as diminish erosion in the project area, BMPs will be implemented during construction.

Construction Activity Permitting: Caltrans' NPDES permit is linked to the Construction General Permit; Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction Activities (Order No. 99-08 DWQ) which regulates discharges from construction sites. By law, all storm water discharges associated with construction activity where clearing, grading, and excavation results in soil disturbance of at least 1 acre of total land area, such as this project, must comply with the provisions of this NPDES Permit and develop and implement an effective Storm Water Pollution Prevention Plan (SWPPP). Caltrans' requires the submission of a Notification of Construction (NOC) to the RWQCB at least 30 days prior to construction and prepare the SWPPP prior to the beginning of construction. Implementation of the SWPPP starts with the commencement of construction and continues through the completion of the project.

Upon completion of the project, Caltrans must submit a Notice of Completion of Construction (NOCC) to the RWQCB to indicate that construction is complete.

Construction Dewatering Permit: Construction dewatering activity is defined as pumped or drained discharges of groundwater and/or storm water from excavations or other points of accumulation associated with a construction activity. Dewatering discharges cannot be considered as an automatic conditionally exempt discharge through the permit, but rather it may be conditionally exempt once the proposed discharge is reported, reviewed, and approved on case-by-case basis by the Central Valley RWQCB. Otherwise, Caltrans must implement the appropriate BMPs to meet the conditions of the Central Valley RWQCB to ensure dewatering is not a source of pollutants in the storm drain system or surface water once it is discharged. The project is not anticipating dewatering. However, any dewatering that may take place due to the number of irrigation ditches within the project limits will be coordinated with Central Valley RWQCB during the PS&E phase through the Caltrans district NPDES coordinator.

The proposed project is not expected to cause substantial downstream erosion or siltation. However, the practices outlined in the Storm Water Management Plan and Statewide Storm Water Practice Guidelines ensure that certain minimum design elements be incorporated into projects to maintain or improve water quality. The key elements are as follows:

- Prevent Downstream Erosion – design of drainage facilities to avoid causing or contributing to downstream erosion. Drainage outfalls, when appropriate, will discharge to suitable control measures.
- Stabilize Disturbed Soil Areas – design would incorporate stabilization of disturbed areas (when appropriate) with seeding, vegetative or other types of cover.
- Maximize Existing Vegetative Surfaces – design would limit footprints of cuts and fills to minimize removal of existing vegetation.

With the preceding measures in place through the design of the project , along with BMPs during construction, the project as planned would not create a substantial increase in downstream erosion or siltation.

2.15.5 Mitigation Measures

No mitigation measures are required.

2.16 Geology/Soils/Seismic/Topography

2.16.1 Regulatory Setting

For geologic and topographic features, the key federal law is the Historic Sites Act of 1935, which establishes a national registry of natural landmarks and protects "outstanding examples of major geological features." Topographic and geologic features are also protected under CEQA.

This section also discusses geology, soils, and seismic concerns as they relate to public safety and project design. Earthquakes are prime considerations in the design and retrofit of structures. Caltrans' Office of Earthquake Engineering is responsible for assessing the seismic hazard for Caltrans projects. The current policy is to use the anticipated Maximum Credible Earthquake (MCE), from young faults in and near California. The MCE is defined as the largest earthquake that can be expected to occur on a fault over a particular period of time.

2.16.2 Affected Environment

Geology

The project is in an area of Quaternary levee and channel deposits (Qa) (USGS 1987). Quaternary Basin deposits (Holocene) typically consist of soft to stiff silt and clay deposited 200 to 10,000 years ago by the streams and rivers that drain the surrounding mountain ranges.

The site is not in an area known to contain naturally occurring asbestos and presence of serpentine or ultra-mafic rock was not observed in the project limits (CARB 2000 and Caltrans 2001).

Site Seismicity

The Caltrans California Seismic Hazard Map indicates that the Dunnigan Hills Fault is located approximately 20.5 mi to the northwest (Caltrans 1996).

2.16.3 Environmental Consequences

Alternative 1A, 1B, 1C

The structures associated with the project will be constructed in such a way as to withstand a seismic event, thus, is not expected to expose people or structures to adverse effects resulting from earthquake hazards.

Alternative 2—No Build Alternative

The No Build Alternative would not modify I-5 or I-80; therefore, no geological impacts would occur.

2.16.4 Avoidance and Minimization Measures

In order to avoid or minimize geological risks and impacts, the design and construction of the project will adhere to state codes and criteria. The engineering design for the proposed project will be carried out in accordance with Caltrans Seismic Design Criteria.

Roadways and bridges will be designed and constructed to the seismic design requirements for ground shaking specified in the Uniform Building Code for Seismic Zone 3.

Additionally, the following geological hazard avoidance and minimization measures will be included in the design and construction of the proposed build alternative. A geologic and geotechnical investigation of the alignment of the build alternative and laboratory testing of the earth materials will be conducted during the final design phase.

- Site-specific exploratory borings and laboratory testing during final design of any bridge structures will be conducted to delineate any potentially liquefiable materials. Potentially liquefiable materials will either be removed or engineered to reduce their liquefaction potential, or the engineering design will incorporate deep foundations that extend beyond soils with the potential for liquefaction.
- Site-specific borings and testing will include identification of soils with high shrink-swell potential that could damage the roadway over time. Expansive soils will be over excavated and replaced with non-expansive fill or treated with appropriate soil amendments to reduce the potential for shrinking and swelling.
- Soil and slope stability measures will prevent or reduce erosion. Erosion of soils during construction will be minimized using temporary hydro-seeding to provide a vegetation cover with straw bales, plastic sheeting slope cover, and other temporary drainage measures to prevent excessive slope runoff, as needed.

2.16.5 Mitigation Measures

No mitigation measures are required.

2.17 Paleontology

2.17.1 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 1935 [20 U.S. Code 78]). Under California law, paleontological resources are protected by CEQA, the California Administrative Code of Regulations, Title 14, Division 3, Chapter 1, Section 4307 and 4309., and Public Resources Code Section 5097.5.

2.17.2 Affected Environment

The fossiliferous Riverbank Formation has been mapped within the limits of the proposed project and may be disturbed by project activities. Because the Riverbank formation and other potentially affected fossiliferous units of Pleistocene age are regionally extensive and there is a specific need for roadway improvements at the proposed project site, avoiding these paleontologically sensitive units is unlikely to be feasible. If a paleontological resource cannot be avoided, it is necessary to determine its significance or scientific importance before any mitigation measures are proposed. The paleontological evaluation report (PER) fulfills that requirement, and provides the basis for developing the required paleontological mitigation plan (PMP). The PER and PMP are available for review at the District 3 office, 2800 Gateway Oaks Dr., Sacramento, CA.

The project alignment extends along I-5 from the north of the Garden Highway Interchange to south of the Arena Boulevard Interchange, and along I-80, from southeast of the West El Camino Avenue Interchange to a point northwest of the Truxel Road Interchange. Only shallow grading would be required for roadway widening. However, retaining wall construction could require excavation to a depth of as much as 10 feet

below existing grade, and localized disturbance to depths of 60–100 feet below ground surface would be required to drive foundation piles for the new overpass bridges.

The majority of the project site is situated on alluvium of Holocene age. Short segments of the northern I-5 work alignment are situated on the older Holocene basin deposits and Pleistocene Riverbank Formation. Pleistocene and older sedimentary units, including the Riverbank Formation, and possibly also the Modesto Formation, likely occur in the subsurface where the project alignment is immediately underlain by materials of Holocene age.

Holocene Units

The Holocene alluvium consists of un-weathered gravel, sand, and silt. The basin deposits consist of fine-grained silt and clay.

Pleistocene Units

Modesto Formation

The Modesto Formation underlies the Holocene basin deposits across much of the Sacramento Valley. The Modesto Formation contains vertebrate fossils, including rodents and snakes, and is believed to record alluvial fan deposition.

Riverbank Formation

Local stratigraphy varies, but where it is present, the Pleistocene Riverbank Formation (130,000 to 450,000 years) underlies the basin deposits or Modesto Formation. Outcrops of the Riverbank Formation are mapped along I-5 in the northern portion of the proposed project alignment, so this formation is likely concealed at an unknown depth below the Holocene deposits and/or Pleistocene Modesto Formation throughout the remainder of the project footprint. According to Hilton et al. (2000), the Riverbank Formation is at an approximately 12–15 feet depth at the Arco Arena area, approximately 1,040 feet to the east and northeast from the proposed project limit. Caltrans boring logs suggest that the top of the Riverbank Formation is undulatory, or wavy, along the project route, perhaps because it is an erosional contact.

The Riverbank Formation contains an abundant and important Rancholabrean fauna recovered from excavations at the Arco Arena in 1989 and from other localities in the formation. The Arco fossils came from the discontinued Soccer/Baseball stadium construction adjacent to the Arco Arena structure. Some of the taxa recovered include ground sloth, dire wolf, horse, rabbit, birds, wood rat, bison, camel, coyote, antelope, deer and mammoth.

Turlock Lake Formation

The Pleistocene Riverbank Formation is in turn underlain by the Turlock Lake Formation of Late Pliocene to Pleistocene age. The Turlock Lake Formation contains early Pleistocene fossils, including remains of ground sloth, coyote, dire wolf, extinct wolf, saber-toothed cat, mammoth, horse, camel, extinct antolicaprids, deer, jackrabbit, rodents such as pocket gopher and kangaroo rat, duck, and pond turtle. It is interpreted as fine-grained fluvial overbank deposits.

Pre-Pleistocene Units

At greater depth, the Pliocene Laguna Formation and Miocene−Late Pliocene Merhten Formation occur. Exact depths to these formations at the proposed project site are unknown without careful subsurface investigation, but given the thickness of the Turlock Lake Formation, they are less likely to be affected than the strata of Pleistocene age, and need no further discussion.

Site Reconnaissance

The soils exposed at the proposed project site are believed to be artificial fill and/or highly disturbed native materials. No fossils were found during the survey; however, it is considered very likely that fossils will be found during construction in the area adjacent to the Arco site due to the known abundance of fossils in the area.

Based on the literature, fossil locality searches and input from local area experts, the Riverbank Formation near the project site and throughout the Sacramento area is known to contain abundant, scientifically important fossils. Because of their known vertebrate content, the Modesto, Riverbank, and Turlock Lake Formations are considered highly sensitive for paleontological resources. The Riverbank Formation is particularly sensitive because of the diverse and scientifically important fauna recovered from this unit at the nearby Arco Arena site.

Strata of Holocene age are not considered paleontologically sensitive except in unusual circumstances, and there is no known reason to consider Holocene deposits at the site sensitive.

2.17.3 Environmental Consequences

The proposed project would result in varying depths of ground disturbance. Disturbance for road widening would be limited to shallow grading, but retaining wall construction could require excavation to a depth of as much as 10 feet below existing grade, and pile driving for overpass foundations would cause localized disturbance to depths of 60–100 feet below ground surface.

Highly sensitive vertebrate-bearing deposits of Pleistocene age are exposed at the surface in portions of the northern I-5 work alignment (Riverbank Formation) and are presumed to be present in the shallow subsurface in the remainder of the project footprint (Riverbank Formation; possibly also Modesto Formation and older Turlock Lake Formation), based on regional stratigraphic relationships. The depth to the top of the Riverbank Formation varies from 0 where the unit is exposed at the surface, to an inferred maximum of about 20 feet below grade at the San Juan Road Overcrossing. Given the anticipated depths of ground disturbance required for project construction, there would be substantial potential for impacts on the Riverbank Formation. If the Modesto Formation were present in the subsurface above the Riverbank Formation, it would be encountered at shallower depths, and would also be subject to disturbance. In the limited areas where pile-driving is required, the older Turlock Lake Formation underlying the Riverbank Formation would likely also be impacted. All three of the fossiliferous units potentially subject to project-related impacts—the Modesto, Riverbank, and Turlock Lake Formations—are regionally extensive. Avoiding all impacts to these formations is not likely to be feasible.

2.17.4 Avoidance and Minimization Measures

A Paleontological Monitoring and Curation Plan would be implemented. This plan contains guidance in the following areas:

- The contract and task order requirements for monitoring and mitigation.
- The general field and laboratory methods proposed.
- Any relevant curation requirements.
- An overview of report content and format.
- Proposed report distribution.
- The staff qualifications needed to implement the PMP.

When the final grading plans are prepared, a qualified paleontologist responsible for conducting the mitigation will review the final depths of disturbance, assess the potential for disturbance of known and potentially fossiliferous strata, and adjust the mitigation plan if needed.

2.17.5 Mitigation Measures

No mitigation measures are required.

2.18 Hazardous Waste or Materials

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

- Community Environmental Response Facilitation Act of 1992 (CERFA).
- Clean Water Act.
- Clean Air Act.
- Safe Drinking Water Act.
- Occupational Safety & Health Act (OSHA).
- Atomic Energy Act.
- Toxic Substances Control Act (TSCA).
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA).

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

Hazardous waste in California is regulated primarily 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.

2.18.2 Affected Environment

The Caltrans Office of Environmental Engineering, Hazardous Waste completed an Initial Site Assessment (ISA) in November of 2006. The ISA consisted of a field review and a search of regulatory agency databases containing information on known hazardous materials sites. The database search identified no recorded active hazardous materials sites within the project area. Based on this investigation and considering the nature of work and distance to the listed known petroleum hydrocarbon contaminated sites, no petroleum hydrocarbon hazardous waste is expected to be encountered within the project limits.

Aerially Deposited Lead (ADL)

Lead-contaminated soil is found along highways due to the historical use of leaded gasoline, particularly along highways that may have had high vehicle emissions due to large traffic volumes, congestion, or stop and go driving conditions during the time period when leaded gasoline was in use. Most ADL due to vehicle emissions would have been deposited prior to 1986.

Lead-based paint

Bridges and other structures within the project limits may contain lead-based paint. Lead was a common ingredient of paints manufactured before 1978 and is still an ingredient in some industrial paints. Based on the As-Built Plans and a visual observation, the bridge structures within the project limits do not contain lead-based paint.

The existing yellow traffic stripe within the roadway may contain lead and other heavy metals such as chromium. The residue produced when the yellow traffic stripe is removed contains heavy metals in concentrations that may exceed established thresholds and may produce toxic fumes when heated.

Asbestos Containing Materials (ACMs)

Based on the As-Built Plans review via "Bridge Inspection Records Information System – BIRIS," asbestos containing materials (ACMs) are not present at the expansion joint fillers and abutment of I-5/80 separation Br. 24-0207L/R, San Juan Road Br. 24-0210 OC, or Natomas Main Canal Br. 24-0332. The As Built plans show the use of polyurethane seal.

Based on the As-Built Plans review via "Bridge Inspection Records Information System – BIRIS," asbestos containing materials (ACMs) may be present at the expansion joint fillers, abutment, and at the guardrail shims of North Connector Bridge 24-0208 L/R and San Juan Road Undercrossing Bridge 24-209.

Without the benefit of sampling and testing, ACMs are presumed to be present at the expansion joint fillers, abutment, and at the guardrail shims. Also, for structures built prior to 1980, ACMs should be presumed present at the structure joints.

2.18.3 Environmental Consequences

Build Alternatives

It is anticipated that ADL, lead-based paint, ACMs, and yellow traffic stripe containing lead and other heavy metals such as chromium may be encountered during construction of the project.

During construction, a number of materials will be used including gasoline, diesel fuel, oil, and lubricants for operation of construction equipment. These materials are typically used, handled, and stored by contractors on all roadway construction projects. No acutely hazardous materials would be used or stored on-site during construction. Construction of all the "build" alternatives could potentially result in small fuel spills from construction or vehicles.

Based on an ADL Investigation Report, completed in September 2002, low levels of ADL were detected in the soils along the Truxel Road overcrossing ramps on I-80 (6.58 mg/Kg Total Lead average and a 8.4 pH) concluding that the soil may be reused with no restrictions based on lead content and/or disposed of as a non-hazardous waste.

No Build Alternative

The No Build Alternative would not involve construction and would not have the potential to encounter or disturb hazardous waste or materials.

2.18.4 Avoidance and Minimization Measures

During project construction activities, removing ACMs must be accomplished by an appropriately certified contractor in a way that contains, collects, and disposes of the small quantity of ACM in accordance with state and federal law. Appropriate Special Provisions for this work should be included in the project's construction contract; the Contractor is responsible to do this notification in a timely manner.

Surplus excavated soil if any, along I-80 with the exception of Truxel Road ramps, will not be disposed of outside the project limits without being sampled and tested to determine the level of ADL contamination in order to ensure that the waste soil is appropriately disposed of as a hazardous, regulated or unregulated waste, or whether the soils are suitable for reuse or disposal with no restrictions.

Caltrans will ensure that a Health and Safety Plan is implemented and addresses the potential effects of the various chemical compounds that could be encountered within the project area. The Health and Safety Plan

will include evaluations of the suspected chemical hazards, including symptoms of exposure and emergency treatment, appropriate use of personal protection equipment, and air monitoring.

The Contractor shall prepare a project specific "Lead Compliance Plan" pursuant to Title 8 of the California Code of Regulations - Section 1532.1, to prevent or minimize worker exposure to lead.

Any removed yellow traffic stripe material will be tested prior to disposal at an appropriate waste facility. Appropriate Special Provisions for this work shall be included in the project's construction contract.

The routine use of hazardous materials, such as gasoline or diesel fuel for construction equipment, will be required by the project. Equipment to clean up fuel leaks and spills will be available at each project construction location. The Contractor will be required to safely store materials and immediately clean up spills if they occur.

2.19 Air Quality

This section discusses the potential impacts to air quality resulting from the proposed project. A copy of the Air Quality Report, prepared in April 2009, is available from Caltrans District 3 at 2800 Gateway Oaks Dr., Sacramento, CA, 95833.

2.19.1 Regulatory Setting

The Clean Air Act, as amended in 1990, is the federal law that governs air quality. Its counterpart in California is the California Clean Air Act of 1988. These laws set standards for the concentration of pollutants that can be in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). Standards have been established for six criteria pollutants that have been linked to potential health concerns: carbon monoxide (CO), nitrogen dioxide (NO2), ozone (O3), particulate matter (PM), lead (Pb), and sulfur dioxide (SO2).

Under the 1990 Clean Air Act Amendments, the U.S. Department of Transportation cannot fund, authorize, or approve federal actions to support programs or projects that are not first found to conform to the State Implementation Plan for achieving the goals of the Clean Air Act requirements. Conformity with the Clean Air Act takes place on two levels—first, at the regional level and second, at the project level. The proposed project must conform at both levels to be approved.

Regional level conformity is concerned with how well the region is meeting the standards set for carbon monoxide, nitrogen dioxide, ozone, and particulate matter. California is in attainment for the other criteria pollutants. At the regional level, Regional Transportation Plans are developed that include all of the transportation projects planned for a region over a period of years, usually at least 20. Based on the projects included in the Regional Transportation Plan (RTP), or in this case the Metropolitan Transportation Plan (MTP), an air quality model is run to determine whether or not the implementation of those projects would conform to emission budgets or other tests showing that attainment requirements of the Clean Air Act are met. If the conformity analysis is successful, the regional planning organization, which is Sacramento Area

Council of Governments (SACOG) for the six-county (El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba) Sacramento Region, and the appropriate federal agencies, such as the Federal Highway Administration, make the determination that the MTP is in conformity with the State Implementation Plan for achieving the goals of the Clean Air Act. Otherwise, the projects in the MTP must be modified until conformity is attained. If the design and scope of the proposed transportation project are the same as described in the MTP, then the proposed project is deemed to meet regional conformity requirements for purposes of the project-level analysis.

Conformity at the project-level also requires "hot spot" analysis if an area is "non-attainment" or "maintenance" for carbon monoxide (CO) and/or particulate matter. A region is a "non-attainment" area if one or more monitoring stations in the region fail to attain the relevant standard. Areas that were previously designated as non-attainment areas but have recently met the standard are called "maintenance" areas. "Hot spot" analysis is essentially the same, for technical purposes, as carbon monoxide or particulate matter analysis performed for National Environmental Policy Act. Conformity does include some specific standards for projects that require a hot spot analysis. In general, projects must not cause the carbon monoxide standard to be violated, and in "non-attainment" areas, the project must not cause any increase in the number and severity of violations. If a known carbon monoxide or particulate matter violation is located in the project vicinity, the project must include measures to reduce or eliminate the existing violation(s) as well.

2.19.2 Affected Environment

A copy of the Air Quality Report is available for review at the Caltrans District 3 Sacramento Office, 2800 Gateway Oaks Drive, Sacramento, CA 95833 during normal business hours.

The proposed project is located within the Sacramento Valley Air Basin (SVAB). The SVAB has a Mediterranean climate characterized by hot, dry summers and cool, rainy winters. During the winter, the North Pacific storm track intermittently dominates valley weather, and fair-weather alternates with periods of extensive clouds and precipitation. Also characteristic of winter weather in the valley are periods of dense and persistent low-level fog, which is most prevalent between storms. The frequency and persistence of heavy fog in the valley diminishes with the approach of spring. The average yearly temperature range for the Sacramento Valley is between 20 and 115° Fahrenheit (F), with summer high temperatures often exceeding 90°F and winter low temperatures occasionally dropping below freezing.

Prevailing wind in the Sacramento Valley is generally from the southwest due to marine breezes flowing through the Carquinez Strait. Associated with the influx of air through the Carquinez Strait is the Schultz Eddy. The Schultz Eddy is an eddy formed when mountains on the valley's western side divert incoming marine air. The eddy contributes to the formation of a low-level southerly jet between 500 and 1,000 feet above the surface that is capable of speeds in excess of 35 mph. This jet is important for air quality in the Sacramento Valley because of its ability to transport air pollutants over large distances.

The SVAB's climate and topography contribute to the formation and transport of photochemical pollutants throughout the region. The region experiences temperature inversions that limit atmospheric mixing and trap pollutants; high pollutant concentrations result near the ground surface. The highest concentrations of

photochemical pollutants occur from late spring to early fall when photochemical reactions are greatest because of intensifying sunlight and lowering altitude of daytime inversion layers. Surface inversions (those at altitudes of 0 to 500 feet above sea level) are most frequent during winter, and subsidence inversions (those at 1,000 to 2,000 feet above sea level) are most common in the summer.

Existing Air Quality Conditions

Direct emissions from automobiles contain primarily hydrocarbons, NO2, and CO. Indirect emissions include ozone and PM10. Lead emissions from automobiles have declined in recent years through the increased use of unleaded gasoline. Ozone is formed when nitrogen oxides (NOx) and reactive organic gases (ROG) react in the presence of sunlight. PM10 emissions from vehicular sources are largely due to aerosols formed in the atmosphere from NOx and ROG compounds and, to a lesser extent, directly from vehicle travel over materials previously deposited on the road or tire and brake wear. Due to their formation and/or dispersion patterns, hydrocarbons, NO2, and O3 can only be reasonably analyzed from a regional perspective. PM10 is a project-level pollutant as well as a regional pollutant. CO is a relatively stable and site-specific pollutant with major concentrations found immediately adjacent to roadways. It is analyzed to determine air quality impacts at the project specific microscale level.

Table 16 summarizes the National Ambient Air Quality Standards (NAAQS) and California Ambient Air Quality Standards (CAAQS). The NAAQS are comprised of both primary and secondary standards. Primary standards are designed to protect public health, while secondary standards protect public welfare from known or anticipated adverse effects of air pollutants (e.g., reduced visibility or property damage). For the purposes of this project, the importance of an impact will be based upon comparison with the more stringent primary standards.

Table 16 State and Federal Criteria Air Pollutant Standards, Effects, Sources, and Status

Pollutant	Averaging Time	State Standard (CAAQS)	Federal Standard (NAAQS)	Health and Atmospheric Effects	Typical Sources
Ozone (O_3) [2] **State Status:** Non-Attainment **Federal Status:** Non-Attainment	1 hour 8 hours	0.09 ppm 0.070 ppm	--- [3] 0.075 ppm	High concentrations irritate lungs. Long-term exposure may cause lung tissue damage. Long-term exposure damages plant materials and reduces crop productivity. Precursor organic compounds include a number of known toxic air contaminants.	Low-altitude ozone is almost entirely formed from reactive organic gases (ROG) and nitrogen oxides (NO_x) in the presence of sunlight and heat. Major sources include motor vehicles and other mobile sources, solvent evaporation, and industrial and other combustion processes. Biologically-produced ROG may also contribute.
Carbon Monoxide (CO) **State Status:** Attainment **Federal Status:** Attainment	1 hour 8 hours 8 hours (Lake Tahoe)	20 ppm 9.0 ppm [1] 6 ppm	35 ppm 9 ppm ---	Asphyxiant. CO interferes with the transfer of oxygen to the blood and deprives sensitive tissues of oxygen.	Combustion sources, especially gasoline-powered engines and motor vehicles. CO is the traditional signature pollutant for on-road mobile sources at the local and neighborhood scale.
Respirable Particulate Matter (PM_{10})	24 hours Annual	50 µg/m^3 20 µg/m^3	150 µg/m^3 ---	Irritates eyes and respiratory tract. Decreases lung capacity. Associated with increased cancer	Dust- and fume-producing industrial and agricultural operations; combustion

Pollutant	Averaging Time	State Standard (CAAQS)	Federal Standard (NAAQS)	Health and Atmospheric Effects	Typical Sources
State Status: Non-Attainment **Federal Status:** Non-Attainment				and mortality. Contributes to haze and reduced visibility. Includes some toxic air contaminants. Many aerosol and solid compounds are part of PM_{10}.	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 ($PM_{2.5}$) **State Status:** Non-Attainment **Federal Status:** Attainment	24 hours Annual	--- 12 µg/m^3	35 µg/m^3 15 µg/m^3	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and produces surface soiling. Most diesel exhaust particulate matter – considered a toxic air contaminant – is in the $PM_{2.5}$ size range. Many aerosol and solid compounds are part of $PM_{2.5}$.	Combustion including motor vehicles, other mobile sources, and industrial activities; residential and agricultural burning; also formed through atmospheric chemical (including photochemical) reactions involving other pollutants including NO_x, sulfur oxides (SO_x), ammonia, and ROG.
Nitrogen Dioxide (NO_2)	1 hour Annual	0.18 ppm 0.030 ppm	--- 0.053 ppm	Irritating to eyes and respiratory tract. Colors atmosphere reddish-brown. Contributes to acid rain.	Motor vehicles and other mobile sources; refineries; industrial operations.
Sulfur Dioxide (SO_2)	1 hour 3 hours 24 hours Annual	0.25 ppm --- 0.04 ppm ---	--- 0.5 ppm 0.14 ppm 0.030 ppm	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)[2]	Monthly Quarterly	1.5 µg/m^3 ---	--- 1.5 µg/m^3	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.
Sulfate	24 hours	25 µg/m^3	---	Premature mortality and respiratory effects. Contributes to acid rain. Some toxic air contaminants attach to sulfate aerosol particles.	Industrial processes, refineries and oil fields, mines, natural sources like volcanic areas, salt-covered dry lakes, and large sulfide rock areas.
Hydrogen Sulfide (H_2S)	1 hour	0.03 ppm	---	Colorless, flammable, poisonous. Respiratory irritant. Neurological damage and premature death. Headache, nausea.	Industrial processes such as: refineries and oil fields, asphalt plants, livestock operations, sewage treatment plants, and mines. Some natural sources like volcanic areas and hot springs.
Visibility Reducing Particles (VRP)	8 hours	Visibility of 10 miles or more (Tahoe: 30 miles) at relative humidity less than 70%	---	Reduces visibility. Produces haze. NOTE: not related to the Regional Haze program under the Federal Clean Air Act, which is oriented primarily toward visibility issues in National Parks and other "Class I" areas.	See particulate matter above.
Vinyl Chloride[2]	24 hours	0.01 ppm	---	Neurological effects, liver damage, cancer. Also considered a toxic air contaminant.	Industrial processes

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

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

[2.] The ARB has identified lead, vinyl chloride, and the particulate matter fraction of diesel exhaust as toxic air contaminants. Diesel exhaust particulate matter is part of PM_{10} and, in larger proportion, $PM_{2.5}$. Both the ARB and U.S. EPA have identified various organic compounds that are precursors to ozone and $PM_{2.5}$ as toxic air contaminants. There is no threshold level of exposure for adverse health 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.
[3.] 12/22/2006 Federal court decisions 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.
Greenhouse Gases and Climate Change:
Carbon dioxide and similar "greenhouse gases" are not considered "pollutants" under the Federal Clean Air Act by U.S. EPA, and are not subject to current national ambient air quality standards. A Supreme Court decision on 4/2/2007 may change that position, but further litigation will most likely occur before the situation is settled. EPA is active in the climate change arena. For more information, see: http://yosemite.epa.gov/oar/globalwarming.nsf/content/index.html.
Carbon dioxide and similar "greenhouse gases" are not criteria pollutants under the California Clean Air Act, and ambient air quality standards have not been set. They are, however, regulated by the California Air Resources Board (ARB) based on legislation and Governor's executive orders. Carbon dioxide emission reduction measures adopted to date are in litigation. For more information on ARB's climate change program see: http://www.arb.ca.gov/cc/cc.htm.
There are a number of greenhouse gases, of varying potency. Since carbon dioxide (CO2) is the most prevalent greenhouse gas, most "GHG" analyses express greenhouse gas emissions in terms of "CO2 equivalent." CO2 emissions themselves are closely related to fuel consumption.
Sources:
California Air Resources Board Ambient Air Quality Standards chart (http://www.arb.ca.gov/aqs/aaqs2.pdf)
Sonoma-Marin Area Rail Transit Draft EIR Air Pollutant Standards and Effects table, November 2005, page 3-52.
U.S. EPA and California Air Resources Board air toxics websites, 05/17/2006
U.S. EPA Final Rulemaking (Federal Register, 17 October 2006, 71 FR 61144)
DC Circuit Court decision, South Coast AQMD v. EPA; opinion at the Court's web site accessed 4/2/2007: http://pacer.cadc.uscourts.gov/docs/common/opinions/200612/04-1200a.pdf
Supreme Court decision, Mass. v. EPA; slip opinion at the Court's web site accessed 4/2/2007: http://www.supremecourtus.gov/opinions/06pdf/05-1120.pdf
Updated: 4/12/2009

The primary NAAQS and CAAQS are based on medical studies that relate pollutant concentration and duration of exposure to morbidity and mortality rates for "at risk" populations. The standard must therefore specify both a concentration and an averaging time. Higher concentrations can be tolerated when exposure (or averaging) times are shorter. The averaging time plays a critical role in the modeling process.

The NAAQS for CO is established for two averaging times: 1-hour and 8-hours. These standards are not to be exceeded more than once per year. The procedures described in the Caltrans Transportation Project-Level CO Protocol are designed to estimate the second highest 1-hour and 8-hour annual CO concentrations (called the second annual maximum) (Institute of Transportation Studies 1997). If either of these values exceeds the NAAQS, the impact is considered substantial. This approach is often referred to as a "worst case" analysis. Predictions made for an assumed set of concurrent, worst case conditions guarantee a conservative estimate of the impacts. The California CO standards are not to be exceeded at any time.

The nearest air quality monitoring station in the vicinity of the project area is the Sacramento Airport Road monitoring station, located at 3801 Airport Road in Sacramento, which monitors for ozone, CO, PM10 and NO2. Air quality monitoring data from the Sacramento Airport Road monitoring station is summarized in Table 17. This table represents air quality monitoring data for the last three years (2005–2007) in which complete data is available.

Table 17 Ambient Air Quality Monitoring Data Measured at the Sacramento Airport Road Monitoring Station

Pollutant Standards	2005	2006	2007
Ozone			
Maximum 1-hour concentration (ppm)	0.100	0.105	0.119
Maximum 8-hour concentration (ppm)	0.074	0.086	0.102
Number of days standard exceeded			
CAAQS 1-hour (>0.09 ppm)	4	5	2
CAAQS 8-hour (>0.070 ppm)	8	13	8
Carbon Monoxide (CO)			
Maximum 8-hour concentration (ppm)	2.97	3.15	5.58
Maximum 1-hour concentration (ppm)	3.9	4.7	6.3
Number of days standard exceeded			
NAAQS 8-hour (>9.0 ppm)	0	0	0
CAAQS 8-hour (>9.0 ppm)	0	0	0
NAAQS 1-hour (>35 ppm)	0	0	0
CAAQS 1-hour (>20 ppm)	0	0	0
Particulate Matter (PM_{10})			
National maximum 24-hour concentration (μg/m3)	56.0	81.0	94.0
National second-highest 24-hour concentration (μg/m3)	44.0	71.0	56.0
Stated maximum 24-hour concentration (μg/m3)	99.8	84.0	98.0
Stated second-highest 24-hour concentration (μg/m3)	89.0	74.0	57.0
National annual average concentration (μg/m3)	20.4	25.7	22.4
State annual average concentration (μg/m3)	20.8	–	23.0
Number of days standard exceeded			
NAAQS 24-hour (>150 μg/m3)	–	0.0	0.0
CAAQS 24-hour (>50 μg/m3)	6.4	–	36.4

Notes: – = insufficient data available to determine the value.
ppm = parts per million.
$\mu g/m^3$ = micrograms per cubic meter.

Sources: California Air Resources Board 2008b; U.S. Environmental Protection Agency 2008.

As shown in Table 17, the Sacramento Airport Road monitoring station has experienced 11 violations of the state 1-hour ozone standard, 29 violations of the state 8-hour ozone standard, no violations of the federal and state CO standards, no violations of the federal 24-hour PM10 standard, and 42.8 violations of the state 24-hour PM10 standard during the 3-year monitoring period between January 2005 and December 2007.

Areas are classified as either attainment or non-attainment with respect to state and federal ambient air quality standards. If a pollutant concentration is lower than or meets the state or federal standard over a designated period of time, the area is classified as being in attainment of the standard for that pollutant. If a pollutant violates the standard, the area is considered a non-attainment area for that pollutant. If data are insufficient to determine whether a pollutant is violating the standard, the area is designated unclassified. This typically occurs in un-urbanized areas where levels of the pollutant are not a concern.

The EPA has classified Sacramento County as a serious non-attainment area with regards to the federal 8-hour ozone standard. With regards to the federal CO standard, the EPA has classified the Sacramento County as a moderate (≤ 12.7 ppm) maintenance area. The EPA has classified Sacramento County as a moderate non-attainment area with regards to the federal PM10 standard and an nonattainment area with regards to the federal PM2.5 standard.

The California Air Resources Board (CARB) has classified Sacramento County as a serious non-attainment area with regards to the State 1-hour ozone standard. With regards to the State CO standard, the CARB has classified Sacramento County as an attainment area. The CARB has classified Sacramento County as a non-attainment area with regards to the State PM10 and PM2.5standards.

Sensitive Receptors

The Sacramento Metropolitan Air Quality Management District (SMAQMD) defines sensitive receptors as facilities that house or attract children, the elderly, people with illnesses, or others who are especially sensitive to the effects of air pollutants or may experience adverse effects from unhealthful concentrations of air pollutants. Hospitals and clinics, schools, elderly housing and convalescent facilities, and residential areas are examples of sensitive receptors. Sensitive receptors in the vicinity of the Project Area include residential land uses to the north, west, and south. Within the project area, sensitive land uses include residential subdivisions located in the areas adjacent to northbound I-5 and eastbound I-80. In addition, residential subdivisions are also located in the areas adjacent to southbound I-5 and westbound I-80. South of I-80, office park developments are located adjacent to southbound I-5. In addition, several motels (Marriott Springhill Suites, Residence Inn, and Hilton Garden Inn) are located adjacent to southbound I-5 south of I-80. Figure 12 indicates the locations of sensitive receptors located in the vicinity of the project area.

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Figure 3-1
Location of Sensitive Receptors in Vicinity of Project Area (Sheet 1 of 5)

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Figure 3-1
Location of Sensitive Receptors in Vicinity of Project Area (Sheet 2 of 5)

Graphics ... 00879.07 (3.09)

Figure 3-1
Location of Sensitive Receptors in Vicinity of Project Area (Sheet 3 of 5)

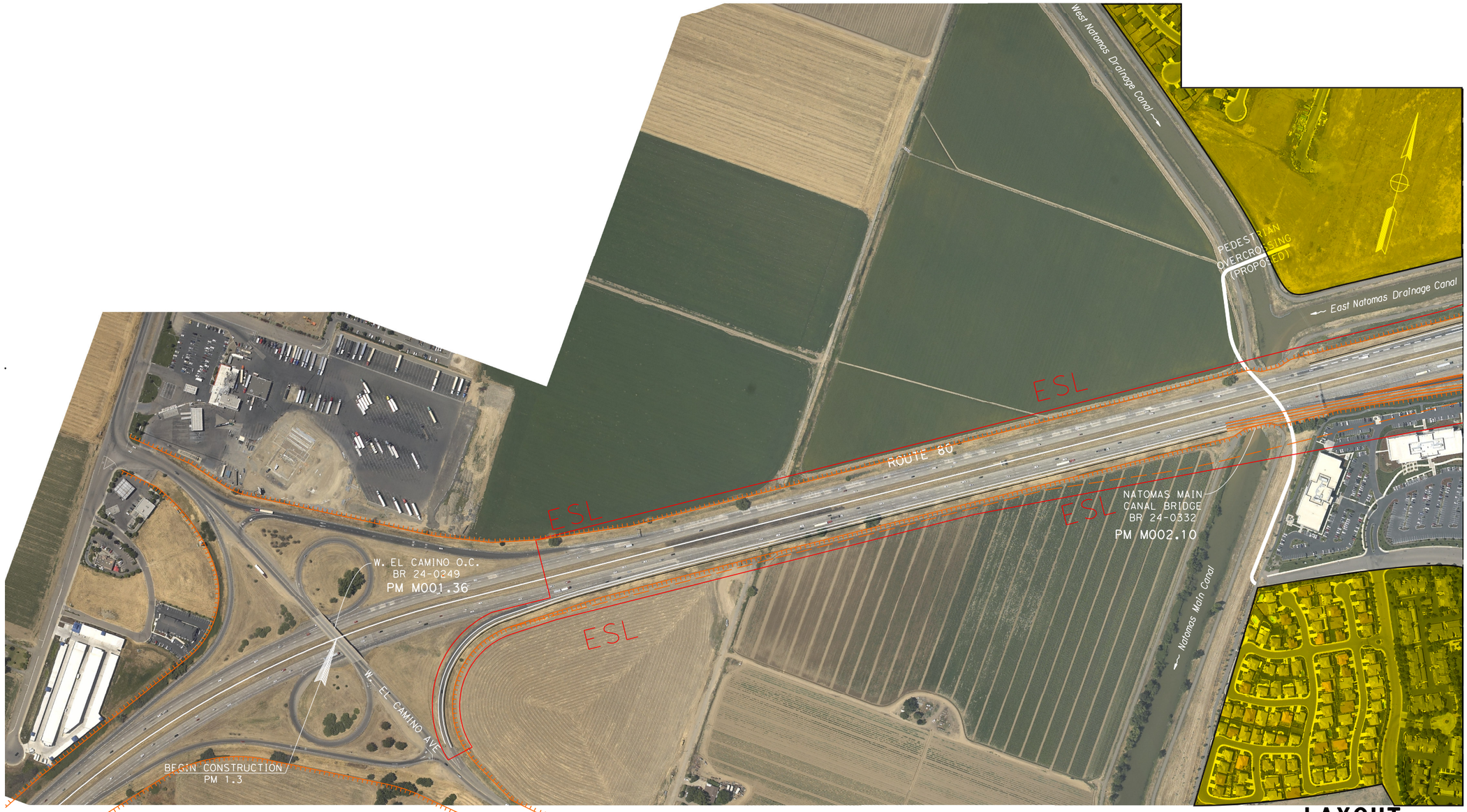

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Figure 3-1
Location of Sensitive Receptors in Vicinity of Project Area (Sheet 4 of 5)

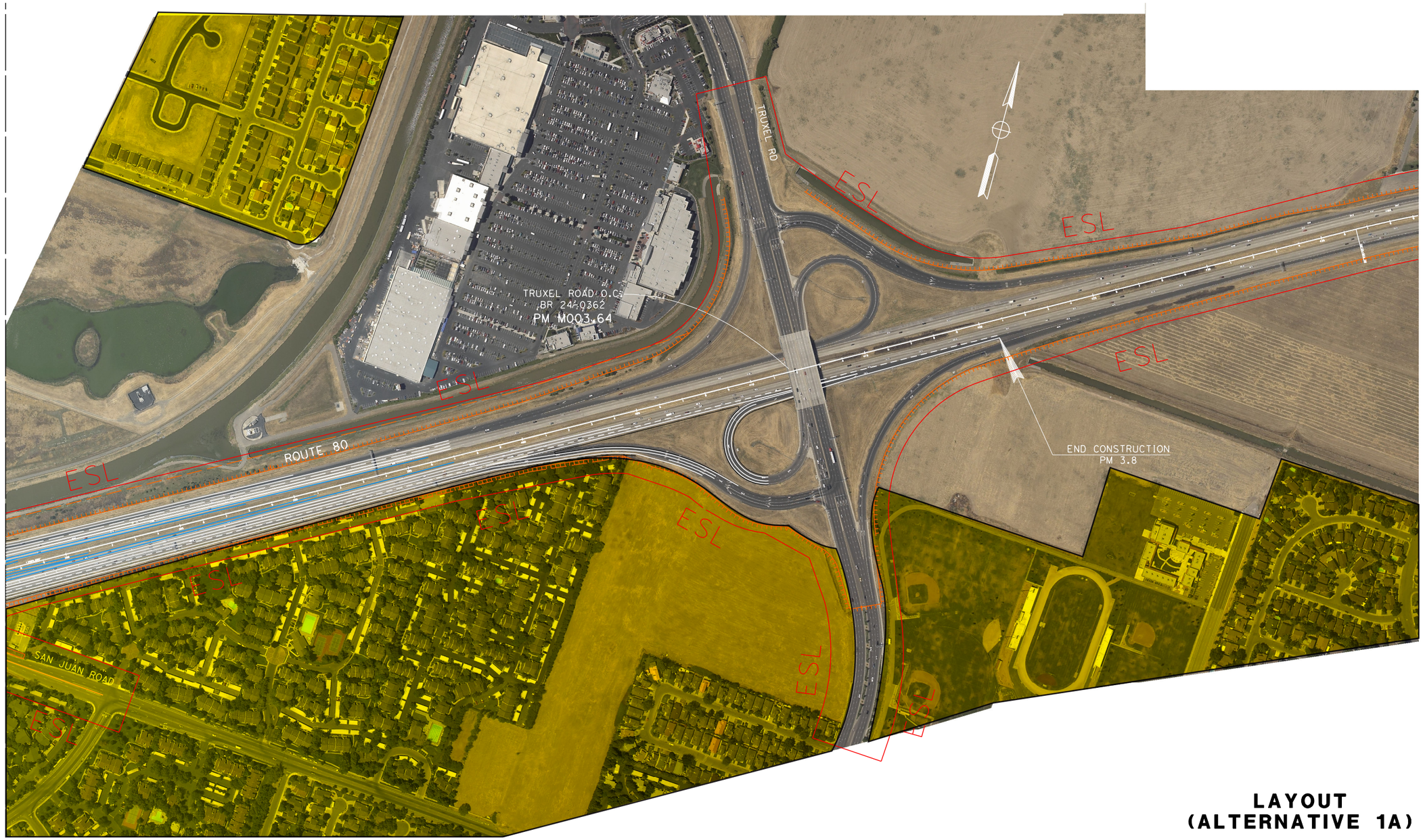

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Figure 3-1
Location of Sensitive Receptors in Vicinity of Project Area (Sheet 5 of 5)

2.19.3 Environmental Consequences

Conformity with the State Implementation Plan (SIP)

Federal and state air quality laws require identification of areas not meeting the ambient air quality standards. These areas must develop regional air quality plans to eventually attain the standards. Under federal law, the plans are referred to as State Implementation Plans (SIP). In California, the SIP is composed of regional air quality plans from throughout the state. A project level conformity analysis shows that the project will conform with the SIP, including the localized impact analysis for CO and PM10 required by 40 CFR 93.116 and 93.123. This project is not a Project of Air Quality Concern (POAQC) regarding PM_{10} and $PM_{2.5}$ as defined in 40 CFR 93.123(b)(1) and meets the requirements of the Clean Air Act and 40 CFR 93.116, therefore, an explicit PM_{10} or $PM_{2.5}$ hot-spot analysis are not required.

Regional Air Quality Conformity

The proposed project is in the MTP 2035, which was found to conform by SACOG on March 20, 2008, and FHWA and Federal Transit Administration (FTA) adopted the air quality conformity finding on March 24, 2009. The project is also included in SACOG's financially constrained 2009–2012 Metropolitan Transportation Improvement Program (MTIP) as SACOG # CAL18410, page 92. SACOG's MTIP was adopted by SAGOG on November 17, 2008, and found to conform by FHWA and FTA on August 21, 2009. The design concept and scope of the proposed project is consistent with the project description in the 2035 MTP, the 2009–2012 MTIP, and the assumptions in SACOG's regional emissions analysis.

Table 18 Modeled Carbon Monoxide Levels Measured at Receptors in the Vicinity of the Project Area for Existing Conditions

Segment	Receptor[1]		
		1-hour CO[2]	8-hour CO[3]
Richards Boulevard to Garden Hwy	1	7.1	5.2
	2	7.1	5.2
	3	6.5	4.8
	4	6.5	4.8
Garden Hwy to W El Camino Ave	5	8.2	5.8
	6	8.2	5.8
	7	7.3	5.3
	8	7.3	5.3
I-80 to Arena Boulevard	9	7.9	5.6
	10	7.9	5.6
	11	7.1	5.2
	12	7.1	5.2
Del Paso Rd to SR 99	13	6.8	5.0
	14	6.8	5.0
	15	6.3	4.7
	16	6.3	4.7

Notes:
[1] Receptors 1, 2,5, 6, 9, 10, 13, and 14 are located are located 50 feet from the center of northbound I-5. Receptors 3, 4, 7, 8, 11, 12, 15, and 16 are located are located 75 feet from the center of northbound I-5.
[2] The federal and state 1-hour standards are 35 and 20 ppm, respectively.
[3] The federal and state 8-hour standards are 9 and 9.0 ppm, respectively.

Table 19 Modeled Carbon Monoxide Levels Measured at Receptors in the Vicinity of the Project Area for 2020 Conditions

Segment	Receptor[1]	2020 No Project[2]		2020 Mixed Flow[2]		2020 Alternative 1A[2]		2020 Alternative 1B[2]		2020 Alternative 1C[2]	
		1-hour CO[3]	8-hour CO[4]	1-hour CO[3]	8-hour CO[4]	1-hour CO[3]	8-hour CO[4]	1-hour CO[3]	8-hour CO[4]	1-hour CO[3]	8-hour CO[4]
Richards Boulevard to Garden Hwy	1	5.9	4.4	5.9	4.4	5.9	4.4	5.9	4.4	5.9	4.4
	2	5.9	4.4	5.9	4.4	5.9	4.4	5.9	4.4	5.9	4.4
	3	5.6	4.3	5.6	4.3	5.6	4.3	5.6	4.3	5.6	4.3
	4	5.6	4.3	5.6	4.3	5.6	4.3	5.6	4.3	5.6	4.3
Garden Hwy to W El Camino Ave	5	5.9	4.4	5.1	4.0	5.9	4.4	5.9	4.4	5.9	4.4
	6	5.9	4.4	5.1	4.0	5.9	4.4	5.9	4.4	5.9	4.4
	7	5.7	4.3	5.0	3.9	5.6	4.3	5.6	4.3	5.6	4.3
	8	5.7	4.3	5.1	4.0	5.6	4.3	5.6	4.3	5.6	4.3
I-80 to Arena Boulevard	9	5.9	4.4	5.8	4.4	5.9	4.4	5.9	4.4	5.9	4.4
	10	5.9	4.4	5.8	4.4	5.9	4.4	5.9	4.4	5.9	4.4
	11	5.6	4.3	5.6	4.3	5.7	4.3	5.7	4.3	5.7	4.3
	12	5.6	4.3	5.6	4.3	5.7	4.3	5.7	4.3	5.7	4.3
Del Paso Rd to SR 99	13	5.5	4.2	5.5	4.2	5.5	4.2	5.5	4.2	5.6	4.3
	14	5.5	4.2	5.5	4.2	5.5	4.2	5.5	4.2	5.6	4.3
	15	5.3	4.1	5.4	4.1	5.4	4.1	5.4	4.1	5.4	4.1
	16	5.3	4.1	5.4	4.1	5.4	4.1	5.4	4.1	5.4	4.1

[1] Receptors 1, 2,5, 6, 9, 10, 13, and 14 are located are located 50 feet from the center of northbound I-5. Receptors 3, 4, 7, 8, 11, 12, 15, and 16 are located are located 75 feet from the center of northbound I-5.
[2] Background concentrations of 5.0 ppm and 3.9 ppm were added to the modeling 1-hour and 8-hour results, respectively.
[3] The federal and state 1-hour standards are 35 and 20 ppm, respectively.
[4] The federal and state 8-hour standards are 9 and 9.0 ppm, respectively.

Table 20 Modeled Carbon Monoxide Levels Measured at Receptors in the Vicinity of the Project Area for 2030 Conditions

Segment	Receptor[1]	2030 No Project[2]		2030 Mixed Flow[2]		2030 Alternative A[2]		2030 Alternative 1B[2]		2030 Alternative 1C[2]	
		1-hour CO[3]	8-hour CO[4]	1-hour CO[3]	8-hour CO[4]	1-hour CO[3]	8-hour CO[4]	1-hour CO[3]	8-hour CO[4]	1-hour CO[3]	8-hour CO[4]
Richards Boulevard to Garden Hwy	1	5.6	4.3	5.6	4.3	5.6	4.3	5.6	4.3	5.6	4.3
	2	5.6	4.3	5.6	4.3	5.6	4.3	5.6	4.3	5.6	4.3
	3	5.4	4.1	5.4	4.1	5.4	4.1	5.5	4.2	5.4	4.1
	4	5.4	4.1	5.4	4.1	5.4	4.1	5.5	4.2	5.4	4.1
Garden Hwy to W El Camino Ave	5	5.6	4.3	5.6	4.3	5.6	4.3	5.6	4.3	5.6	4.3
	6	5.6	4.3	5.6	4.3	5.6	4.3	5.6	4.3	5.6	4.3
	7	5.4	4.1	5.4	4.1	5.4	4.1	5.5	4.2	5.4	4.1
	8	5.4	4.1	5.4	4.1	5.4	4.1	5.5	4.2	5.4	4.1
I-80 to Arena Boulevard	9	5.5	4.2	5.7	4.3	5.7	4.3	5.7	4.3	5.7	4.3
	10	5.5	4.2	5.7	4.3	5.7	4.3	5.7	4.3	5.7	4.3
	11	5.4	4.1	5.5	4.2	5.5	4.2	5.5	4.2	5.5	4.2
	12	5.4	4.1	5.5	4.2	5.5	4.2	5.5	4.2	5.5	4.2
Del Paso Rd to SR 99	13	5.4	4.1	5.4	4.1	5.4	4.1	5.4	4.1	5.4	4.1
	14	5.4	4.1	5.4	4.1	5.4	4.1	5.4	4.1	5.4	4.1
	15	5.3	4.1	5.3	4.1	5.3	4.1	5.3	4.1	5.3	4.1
	16	5.3	4.1	5.3	4.1	5.3	4.1	5.3	4.1	5.3	4.1

Segment	Receptor[1]	2030 No Project[2]		2030 Mixed Flow[2]		2030 Alternative A[2]		2030 Alternative 1B[2]		2030 Alternative 1C[2]	
		1-hour CO[3]	8-hour CO[4]	1-hour CO[3]	8-hour CO[4]	1-hour CO[3]	8-hour CO[4]	1-hour CO[3]	8-hour CO[4]	1-hour CO[3]	8-hour CO[4]

[1] Receptors 1, 2,5, 6, 9, 10, 13, and 14 are located are located 50 feet from the center of northbound I-5. Receptors 3, 4, 7, 8, 11, 12, 15, and 16 are located are located 75 feet from the center of northbound I-5.
[2] Background concentrations of 5.0 ppm and 3.9 ppm were added to the modeling 1-hour and 8-hour results, respectively.
[3] The federal and state 1-hour standards are 35 and 20 ppm, respectively.
[4] The federal and state 8-hour standards are 9 and 9.0 ppm, respectively.

Table 21 Modeled Carbon Monoxide Levels Measured at Receptors in the Vicinity of the Project Area for 2040 Conditions

Segment	Receptor[1]	2040 No Project[2]		2040 Mixed Flow[2]		2040 Alternative A[2]		2040 Alternative 1B[2]		2040 Alternative 1C[2]	
		1-hour CO[3]	8-hour CO[4]	1-hour CO[3]	8-hour CO[4]	1-hour CO[3]	8-hour CO[4]	1-hour CO[3]	8-hour CO[4]	1-hour CO[3]	8-hour CO[4]
Richards Boulevard to Garden Hwy	1	5.5	4.2	5.5	4.2	5.5	4.2	10.2	7.0	10.1	7.0
	2	5.5	4.2	5.5	4.2	5.5	4.2	10.2	7.0	10.1	7.0
	3	5.3	4.1	5.4	4.1	5.4	4.1	8.8	6.2	8.7	6.1
	4	5.3	4.1	5.4	4.1	5.4	4.1	8.8	6.2	8.7	6.1
Garden Hwy to W El Camino Ave	5	5.5	4.2	5.5	4.2	5.5	4.2	5.6	4.3	5.4	4.1
	6	5.5	4.2	5.5	4.2	5.5	4.2	5.5	4.2	5.4	4.1
	7	5.3	4.1	5.3	4.1	5.4	4.1	5.5	4.2	5.4	4.1
	8	5.3	4.1	5.3	4.1	5.4	4.1	5.3	4.1	5.4	4.1
I-80 to Arena Boulevard	9	5.5	4.2	5.5	4.2	5.5	4.2	5.5	4.2	9.8	6.8
	10	5.5	4.2	5.5	4.2	5.5	4.2	5.5	4.2	9.8	6.8
	11	5.4	4.1	5.4	4.1	5.4	4.1	5.4	4.1	8.5	6.0
	12	5.4	4.1	5.4	4.1	5.4	4.1	5.4	4.1	8.5	6.0
Del Paso Rd to SR 99	13	5.4	4.1	5.4	4.1	5.4	4.1	8.5	6.0	8.5	6.0
	14	5.4	4.1	5.4	4.1	5.4	4.1	8.5	6.0	8.5	6.0
	15	5.3	4.1	5.3	4.1	5.3	4.1	7.5	5.4	7.5	5.4
	16	5.3	4.1	5.3	4.1	5.3	4.1	7.5	5.4	7.5	5.4

[1] Receptors 1, 2,5, 6, 9, 10, 13, and 14 are located are located 50 feet from the center of northbound I-5. Receptors 3, 4, 7, 8, 11, 12, 15, and 16 are located are located 75 feet from the center of northbound I-5.
[2] Background concentrations of 5.0 ppm and 3.9 ppm were added to the modeling 1-hour and 8-hour results, respectively.
[3] The federal and state 1-hour standards are 35 and 20 ppm, respectively.
[4] The federal and state 8-hour standards are 9 and 9.0 ppm, respectively.

Carbon Monoxide NAAQS and CAAQS

CO concentrations are not anticipated to exceed the 1- or 8- hour NAAQS and CAAQS (NAAQS and CAAQS are shown in Table 16). Existing year (2006) (Table 18), construction year (2020) (Table 19) with and without project, interim year (2030) (Table 20) with and without project, and design-year (2040) (Table 21) with and without project conditions were modeled to evaluate CO concentrations relative to the NAAQS and CAAQS. Emissions of CO concentrations are estimated for the northbound segments of I-5 between Richards Boulevard and Garden Highway, Garden Highway and West El Camino Avenue, I-80 and Arena Boulevard, and Del Paso Road and SR 99. These roadway segments were modeled because they were identified in the traffic analysis prepared by Fehr & Peers as the greatest affected segments in the vicinity of the proposed project.

Particulate Matter

The EPA's transportation conformity rules stipulate that transportation projects considered a Project of Air Quality Concern (POAQC), or any other project that is identified by the $PM_{2.5}$ SIP as a localized air quality concern, must be analyzed for local air quality impacts (i.e., hotspot) in $PM_{2.5}$ nonattainment and maintenance areas. For areas without approved conformity SIPs, a PM_{10} hotspot analysis is to be performed only for POAQCs. For areas with an approved conformity SIP, the 2006 PM Conformity Final Rule does not apply and an analysis must be performed that meets the requirements in the approved PM_{10} SIP until the SIP is updated and subsequently approved by the EPA. Guidance provided by the EPA indicates that there are no areas within California where a conformity SIP has been approved. Consequently, all projects that are POAQCs, must undergo PM_{10} (and $PM_{2.5}$) hotspot conformity determinations. Because the proposed project area is located in a moderate nonattainment area with regards to the federal PM_{10} standard and a nonattainment area with regards to the federal $PM_{2.5}$ standard, a hotspot evaluation must be performed for PM_{10} and $PM_{2.5}$.

Existing and projected AADT on I-80 and I-5 are in excess of the 125,000 POAQC threshold identified by the FHWA and EPA. In addition, as previously indicated, medium trucks are anticipated to account for 5 percent of all traffic on I-5 and heavy trucks account for 5 percent of all traffic and heavy trucks are anticipated to account for 6 percent of all traffic (California Department of Transportation 2007). However, because it has been concluded that diesel truck traffic volumes will not increase by over 5 percent between build and no build conditions, the proposed project is not considered a POAQC for PM10 and PM2.5. Because the project is not considered a POAQC, Clean Air Act and 40 CFR 93.116 requirements were met without a hot-spot analysis, since such the proposed project has been found to not be of air quality concern under 40 CFR 93.123(b)(1). Interagency Consultation occurred on February 25, 2009 and found that the proposed project is not a POAQC based on a <5 percent increase in diesel truck traffic volumes between build and no build conditions.

2.19.4 Avoidance and Minimization Measures

Most of the construction impacts to air quality are short-term in duration and, therefore, will not result in adverse or long-term conditions. Implementation of the following measures will reduce any air quality impacts resulting from construction activities:

- The Contractor shall comply with *Caltrans Standard Specifications* Section 14-9.01 and Section 10 of *Caltrans Standard Specifications* (2006).
- Water or dust palliative will be applied to the site and equipment as frequently as necessary to control fugitive dust emissions.
- Soil binder will be spread on any unpaved roads used for construction purposes, and all project construction parking areas.
- Trucks will be washed off as they leave the right of way as necessary to control fugitive dust emissions.

- Construction equipment and vehicles shall be properly tuned and maintained. Low-sulfur fuel shall be used in all construction equipment as provided in California Code of Regulations Title 17, Section 93114.
- Develop a dust control plan documenting sprinkling, temporary paving, speed limits, and expedited revegetation of disturbed slopes as needed to minimize construction impacts to existing communities.
- Locate equipment and materials storage sites as far away from residential and park uses as practical. Keep construction areas clean and orderly.
- To the extent feasible, establish ESAs for sensitive air receptors within which construction activities involving extended idling of diesel equipment would be prohibited.
- Use track-out reduction measures such as gravel pads at project access points to minimize dust and mud deposits on roads affected by construction traffic.
- Cover all transported loads of soils and wet materials prior to transport, or provide adequate freeboard (space from the top of the material to the top of the truck) to reduce PM_{10} and deposition of particulate during transportation.
- Remove dust and mud that are deposited on paved, public roads due to construction activity and traffic to decrease particulate matter.
- To the extent feasible, route and schedule construction traffic to reduce congestion and related air quality impacts caused by idling vehicles along local roads during peak travel times.
- Install mulch or plant vegetation as soon as practical after grading to reduce windblown particulate in the area.
- If NOA is found during construction, rules and regulation of the Sacramento Metropolitan Air Quality Management District regarding NOA must be adhered to when handling this material.

2.19.5 Mitigation Measures

No substantial impacts to air quality would result from implementation of the proposed project and no mitigation is required.

Climate Change

Climate change is analyzed in Chapter 3. Neither EPA nor FHWA has promulgated explicit guidance or methodology to conduct project-level greenhouse gas analysis. As stated on FHWA's climate change website (http://www.fhwa.dot.gov/hep/climate/index.htm), climate change considerations should be integrated throughout the transportation decision-making process–from planning through project development and delivery. Addressing climate change mitigation and adaptation up front in the planning process will facilitate decision-making and improve efficiency at the program level, and will inform the analysis and stewardship needs of project level decision-making. Climate change considerations can easily be integrated into many

planning factors, such as supporting economic vitality and global efficiency, increasing safety and mobility, enhancing the environment, promoting energy conservation, and improving the quality of life.

Because there have been more requirements set forth in California legislation and executive orders regarding climate change, the issue is addressed in the CEQA chapter of this environmental document and may be used to inform the NEPA decision. The four strategies set forth by FHWA to lessen climate change impacts do correlate with efforts that the State has undertaken and is undertaking to deal with transportation and climate change; the strategies include improved transportation system efficiency, cleaner fuels, cleaner vehicles, and reduction in the growth of vehicle hours travelled.

2.20 Noise and Vibration

2.20.1 Regulatory Setting

NEPA and CEQA provide the broad basis for analyzing and abating highway traffic noise effects. The intent of these laws is to promote the general welfare and to foster a healthy environment. The requirements for noise analysis and consideration of noise abatement and/or mitigation, however, differ between NEPA and CEQA.

California Environmental Quality Act

CEQA requires a strictly baseline versus build analysis to assess whether a proposed project will have a noise impact. If a proposed project is determined to have a significant noise impact under CEQA, then CEQA dictates that mitigation measures must be incorporated into the project unless such measures are not feasible. The rest of this section will focus on the NEPA-23 CFR 772 noise analysis; please see Chapter 3 of this document for further information on noise analysis under CEQA.

National Environmental Policy Act and 23 CFR 772

For highway transportation projects with FHWA (and Caltrans, as assigned) involvement, the Federal-Aid Highway Act of 1970 and the associated implementing regulations (23 CFR 772) govern the analysis and abatement of traffic noise impacts. The regulations require that potential noise impacts in areas of frequent human use be identified during the planning and design of a highway project. The regulations contain noise abatement criteria (NAC) that are used to determine when a noise impact would occur. The NAC differ depending on the type of land use under analysis. For example, the NAC for residences (67 dBA) is lower than the NAC for commercial areas (72 dBA). Table 22 summarizes NAC corresponding to various land use activity categories. Activity categories and related traffic noise impacts are determined based on the actual land use in a given area. A noise level is considered to approach the NAC for a given activity category if it is within 1 dBA (A-weighted decibel) of the NAC. The following table lists the noise abatement criteria for use in the NEPA and 23 CFR 772 analyses. Figure 13 lists the noise levels of common activities to enable readers to compare the actual and predicted highway noise-levels discussed in this section with common activities.

Table 22 Activity Categories and Noise Abatement Criteria

Activity Category	Noise Abatement Criteria, A-weighted Noise Level (dBA), Leq(h)	Description of Activities
A	57 Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose
B	67 Exterior	Picnic areas, recreation areas, playgrounds, active sport areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals
C	72 Exterior	Developed lands, properties, or activities not included in Categories A or B above
D	--	Undeveloped lands
E	52 Interior	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums

Source: Caltrans Traffic Noise Analysis Protocal, August 2006

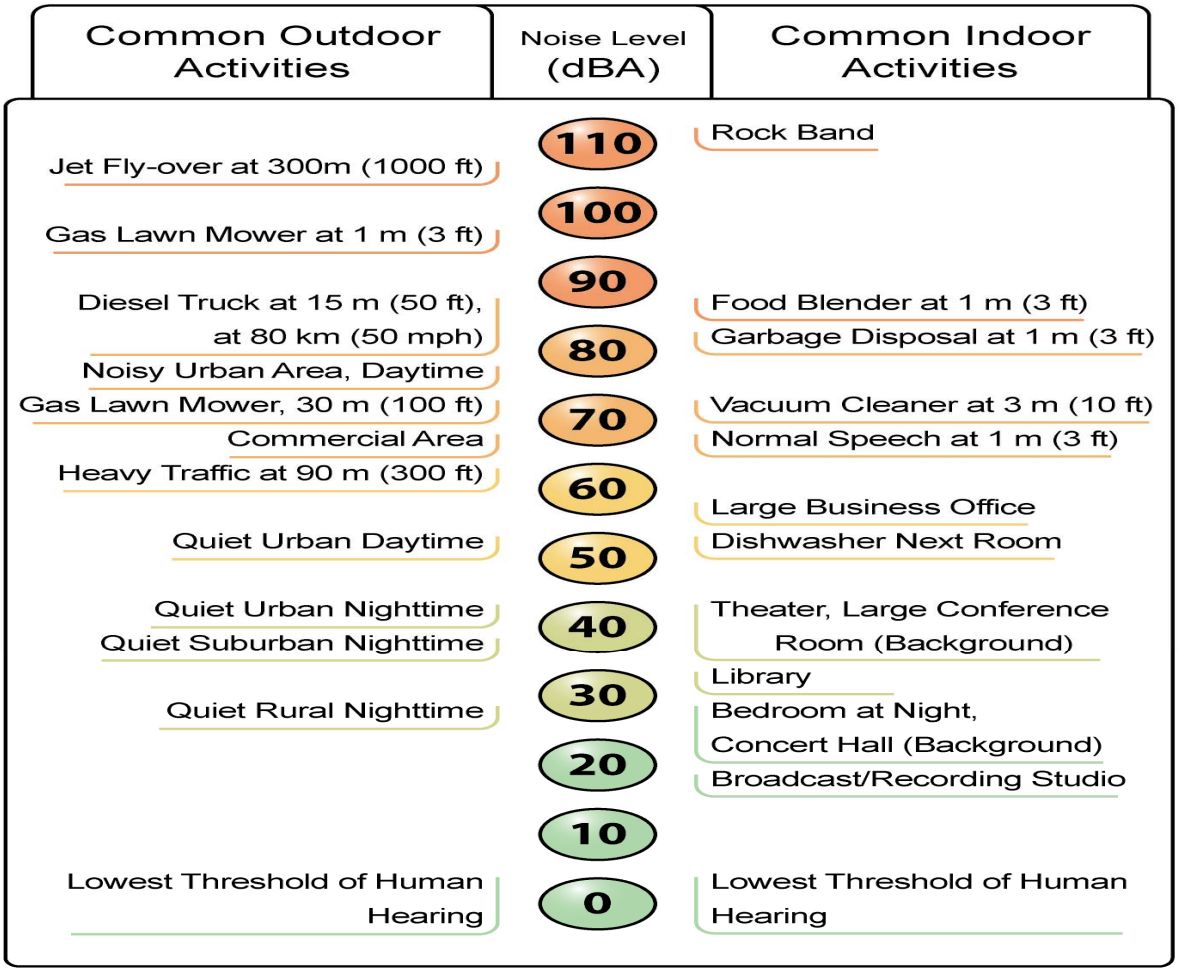
A-weighted decibels (dBA) are adjusted to approximate the way humans perceive sound. Leq(h) is the steady A-weighted level that is equivalent to the same amount of energy as that contained in the actual time-varying levels over one hour.

In accordance with the Caltrans Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects, August 2006, a noise impact occurs when the future noise level with the project results in a substantial increase in noise level (defined as a 12 dBA or more increase) or when the future noise level with the project approaches or exceeds the NAC. Approaching the NAC is defined as coming within 1 dBA of the NAC.

If it is determined that the project would have noise impacts, then potential abatement measures must be considered. Noise abatement measures that are determined to be reasonable and feasible at the time of final design are incorporated into the project plans and specifications as appropriate.

Caltrans' Traffic Noise Analysis Protocol sets forth the criteria for determining when an abatement measure is reasonable and feasible. Feasibility of noise abatement is basically an engineering concern. A minimum 5-dBA reduction in the future noise level must be achieved for an abatement measure to be considered feasible. Other considerations include topography, access requirements, other noise sources, and safety considerations. The reasonableness determination is basically a cost-benefit analysis. Factors used in determining whether a proposed noise abatement measure is reasonable include: residents' acceptance, the absolute noise level, build versus existing noise, environmental impacts of abatement, public and local agencies' input, newly constructed development versus development pre-dating 1978, and the cost per benefited residence.

Figure 13 Typical Noise Levels



2.20.2 Affected Environment

The existing noise environment throughout the project limit varies by location, depending on site characteristics such as proximity to I-5/I-80 and local elevations. There are single-family homes, apartment complexes, and industrial land-uses situated in the project area. Although all developed land uses are evaluated in this analysis, the focus is on locations of frequent human use that would benefit from a lowered noise level. Accordingly, this impact analysis focuses on locations with defined outdoor activity areas, such as residential backyards.

Short-term noise measurements were conducted in order to evaluate the existing noise environment. Noise monitoring was conducted from March 2007 to June 2008. Measurements were taken at 34 locations for duration of 10 to 15 minutes each for the entire project. Figure 14 shows the locations of the receivers. Traffic flow on I-80 and I-5 was videotaped while noise measurements were taken. Traffic was counted and classified by viewing the videotape. Vehicles were classified as automobiles, medium-duty trucks, or heavy-duty trucks. Table 23 summarizes the sound levels collected during the short-term monitoring sessions. The following is a discussion on existing noise levels for each four areas that are within the project limit.

Area 1:

In Area 1, located in the southeast quadrant of the interchange and east along I-80 to the south, noise-sensitive outdoor land uses consists of single-family residents and apartment complexes. Due to topography and change in highway's profile some sensitive receivers are at grade or below the freeway. There is currently an existing 10 foot high soundwall along I-5 and I-80 shielding the affected receivers from the highway noise. Twenty short-term noise measurements (R1 through R18 B) and two long-term measurements (LT1, LT2) were made to quantify the existing worst-hour noise levels. Loudest-hour noise level ranged from 49 to 66 dBA. Two receivers approached or exceeded the NAC of 67 dBA.

Area 2:

Area 2 is located in the southwest quadrant of the I-5/I-80 interchange and west along I-80 to the south. There are Category B and Category C land uses in this area of the project. The Category C land uses that occupy this segment of the project are University of Phoenix, URS., and California Institute of Arts. The measured receivers (R19, R20, R21) are at grade with highway and noise levels vary form 66 to 68. The NAC for Category C land uses is 72 dBA. The Category B land uses are apartments and homes, which are situated further away from the freeway. The measured noise levels were 49.1 and 50.5 dBA (R21A, 21B). None of the receivers approached or exceeded the NAC of 67 dBA.

Area 3:

Area 3 is located in the northwest quadrant of the I-5/I-80 interchange. Activity Category B land uses adjacent to I 5-80 include single-family homes. These homes are newly built and some are still under construction. Some measured receivers (R22 through R30) are at grade with I- 80 and some are below I-5. There are no existing soundwalls, however, the builder has used the first row of homes with no area of frequent human use to serve as the noise barriers for this area. The noise levels vary from 46 to 58. None of receivers approached the NAC of 67 dBA.

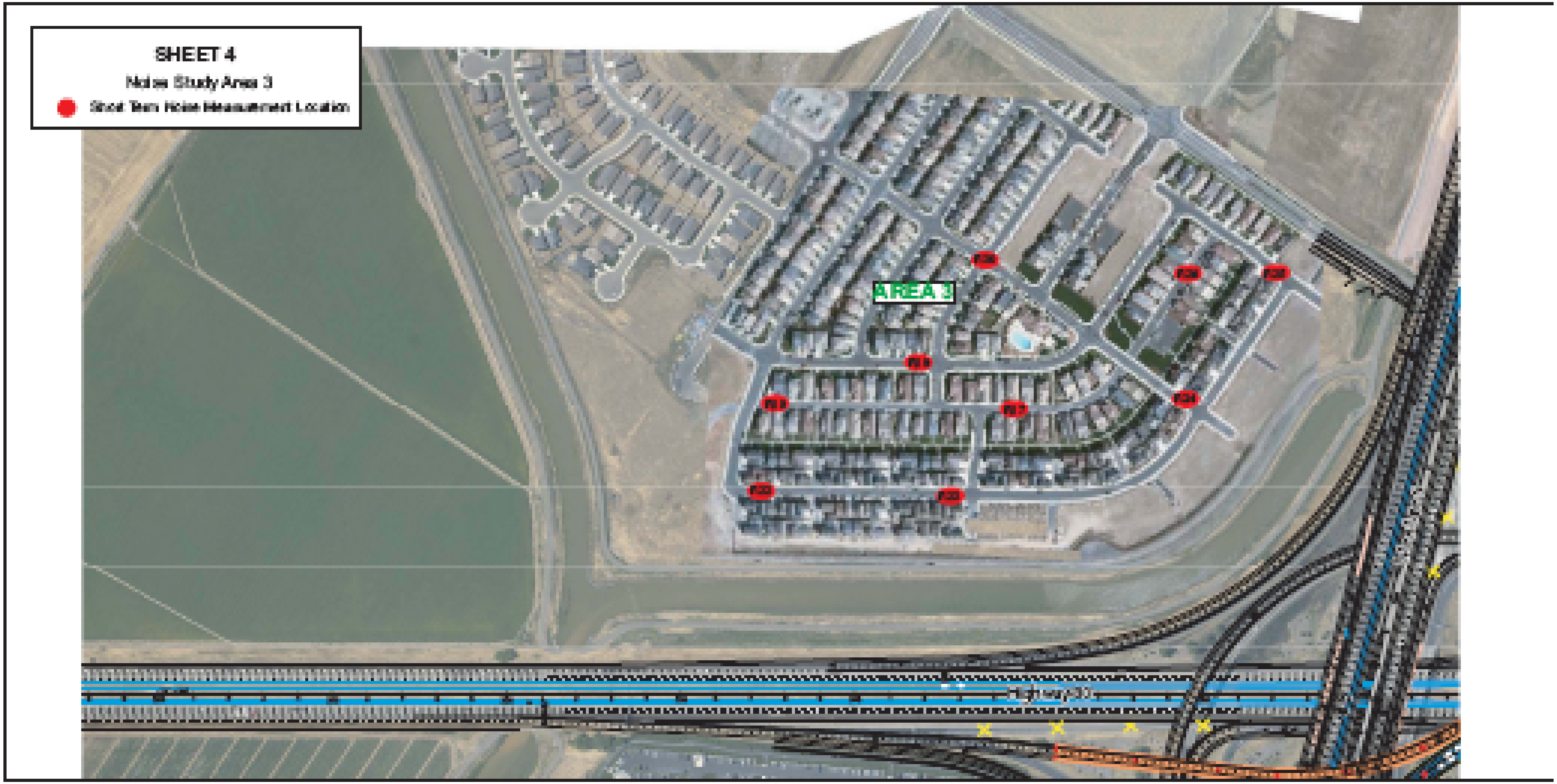
Area 4:

Area 4, located in the northeast quadrant of the interchange, is occupied by Natomas Pumping Station, a Category C land use, which would not benefit from a lower noise level. Therefore, no noise abatement measures are considered for this area of the project. One receiver (R31) was measured at 60.3 dBA.

Figure 14 Noise Study Areas, Sheets 1-5


AREA 1
AREA 1
SHEET 2
Noise Study Area 1


SHEET 3
Noise Study Area 2
Short Term Noise Measurement Location
AREA 2


SHEET 4
Noise Study Area 3
Short Term Noise Measurement Location
AREA 3


SHEET 5
Noise Study Area 4
Short Term Noise Measurement Location
#31
AREA 4
Highway 80

Table 23 Summary of Short-Term Field Measurements

Receiver ID	Location	Land Use	Date	Start Time	Duration (Minutes)	Measured Leq (dBA)
R1	18 La Sara Ct.	Residential	11-14-07	12:07 PM	15	60.1
R2	6 Lasara Ct.	Residential	11-14-07	12:07 PM	15	52.9
R3	Anava Court	Residential	11-14-07	12:39 PM	15	58.4
R4	2888 Barouet Way	Residential	11-14-07	12:39 PM	15	49.2
R5	Ciervo Court	Residential	11-14-07	1:05 PM	15	53.2
R6	2197 Glenrio Way	Residential	11-14-07	1:05 PM	15	50.4
R7	2228 Coroval Dr.	Residential	11-14-07	1:30 PM	15	56.1
R8	2216 Arisco Cir.	Residential	11-14-07	1:30 PM	15	52.9
R9	Maricopa Way	Residential	11-14-07	3:28 PM	15	58.9
R10	2179 Maricopa Way	Residential	11-14-07	3:28 PM	15	54.4
R11	3167 Osuna Way	Residential	11-14-07	3:53 PM	15	54.8
R12	3163 Doroteo Way	Residential	11-14-07	3:53 PM	15	54.4
R13	3199 Osuna Way	Residential	11-15-07	10:40 PM	15	64.4
R14	3179 Doroteo Way	Residential	11-15-07	11:01 PM	15	56.1
R15	19 El Conde Ct.	Residential	11-15-07	11:26 AM	15	66.3
R16	265 Long Branch Ct.	Apartment	11-15-07	1:52 PM	15	61.8
R17	309Long Branch Ct	Apartment	11-15-07	2:14 PM	15	53.5
R18	343 Long Branch Ct	Apartment	11-15-07	2:42 PM	15	57.5
R18A	310 San Juan Ave.	Apartment	6-10-08	11:30 A.M	10	59.6
R18B	77 Serapi Ct.	Residential	6-10-08	11:50 A.M	10	57.9
R19	2850 Gateway Oaks Dr.	Commercial	6-04-08	2:30 PM	10	66.8
R20	2870 Gateway Oaks Dr.	Commercial	6-04-08	2:55 PM	10	66.3
R21	2890 Gateway Oaks Dr.	Commercial	6-04-08	3:15 PM	10	69.2
R21A	2489 Gateway Oaks Dr.	Residential	6-04-08	3:35 PM	10	49.6
R21B	2810 Gateway Oaks Dr.	Apartment	6-04-08	4:05 PM	10	50.5
R22	3020 Tice Creek Way	Residential	6-06-08	2:10 PM	10	56.8
R23	2600 Klayko Way	Residential	6-06-08	1:40 PM	10	57.3
R24	2500 Tourbrook Way	Residential	6-06-08	1:25 PM	10	58.3
R25	2566 Tice Creek Way	Residential	6-06-08	2:30 PM	10	57.7
R26	3156 Brunnet Lane	Residential	6-06-08	2:50 PM	10	52.1
R27	3052 Brunnet Lane	Residential	6-06-08	3:10 PM	10	50.8
R28	3000 Brunnet Lane	Residential	6-06-08	3:30 PM	10	51.9
R29	2979 Spoonwood Dr.	Residential	6-06-08	3:45 PM	10	49.7

Receiver ID	Location	Land Use	Date	Start Time	Duration (Minutes)	Measured Leq (dBA)
R30	2000 Tourbrook Way	Residential	6-06-08	4:20 PM	10	46.8
R31	Pumping Station	Commercial	6-15-08	2:30 PM	10	60.3

Table 24 Summary of Long-Term Field Measurements

Receiver ID	Area ID	Date	Duration(hrs)	Loudest Leq (dBA)
LT-1	1	November 2007	48	66.2
LT-2	1	November 2007	48	70.4

The existing noise environment throughout the project limit varies by location, depending on site characteristics such as proximity to I-5/I-80 and local elevations. There are single-family homes, apartment complexes, and industrial land uses situated in project area.

2.20.3 Environmental Consequences Under NEPA

Traffic noise levels during the loudest time of the day were computed for design-year with project being built. Table 25 summarizes the results of the traffic noise modeling for existing project conditions and future design-year conditions. Increases of 12 dBA or greater are considered by Caltrans to be substantial and therefore result in a traffic noise impact. However, no receivers for this project will experience increase of 12 dBA or more.

Eighteen out of twenty receivers located in Area 1 of the project do not approach or exceed noise abatement criteria (See Figure 14 Noise Study Areas, Sheets 1-5 and Table 25). Two receivers (R13, R15) approached the noise abatement criteria, however, replacing the existing soundwall of 10 feet high with a new soundwall at the maximum height of 16 feet allowed by Caltrans, will not reduce noise by 5 dBA. A five dBA reduction in the future noise level must be achieved for an abatement measure to be considered feasible. Therefore, replacing the existing soundwall is not considered feasible and no further noise abatement measures are considered.

Even though the predicted noise levels exceed the noise abatement criteria for Activity Category C in Area 2, there are no land uses that are considered to have outdoor activity areas with frequent human usages that would benefit from a lower noise level.

Table 25 Existing and Predicted Traffic Noise Impact

Receiver ID	Existing Noise Level Leq (h), dBA	Design-Year With Project, Traffic Noise Level, Leq (h), dBA	Noise Abatement Category Leq (h), dBA	Traffic Noise Impact	Existing Shielding
R1	60	61	B (67)	None	10 ft sound wall
R2	53	55	B (67)	None	10 ft sound wall
R3	57	58	B (67)	None	10 ft sound wall
R4	54	55	B (67)	None	10 ft sound wall

Receiver ID	Existing Noise Level Leq (h), dBA	Design-Year With Project, Traffic Noise Level, Leq (h), dBA	Noise Abatement Category Leq (h), dBA	Traffic Noise Impact	Existing Shielding
R5	57	58	B (67)	None	10 ft sound wall
R6	55	57	B (67)	None	10 ft sound wall
R7	57	58	B (67)	None	10 ft sound wall
R8	56	57	B (67)	None	10 ft sound wall
R9	61	63	B (67)	None	10 ft sound wall
R10	57	58	B (67)	None	10 ft sound wall
R11	57	59	B (67)	None	10 ft sound wall
R12	58	60	B (67)	None	10 ft sound wall
R13	**64**	**66**	**B (67)**	**A/E**	10 ft sound wall
R14	60	61	B (67)	None	10 ft sound wall
R15	**66**	**67**	**B (67)**	**A/E**	10 ft sound wall
R16	62	63	B (67)	None	10 ft sound wall
R17	55	56	B (67)	None	10 ft sound wall
R18	61	62	B (67)	None	10 ft sound wall
R18A	61	62	B (67)	None	10 ft sound wall
R18B	60	61	B (67)	None	10 ft sound wall
R19	68	69	C (72)	None	No wall
R20	66	68	C (72)	None	No wall
R21	**71**	**72**	**C (72)**	**A/E**	No wall
R21A	52	52	B (67)	None	No wall
R21B	52	52	B (67)	None	No wall
R22	57	58	B (67)	None	No wall
R23	62	63	B (67)	None	No wall
R24	61	61	B (67)	None	No wall
R25	62	63	B (67)	None	No wall
R26	58	59	B (67)	None	No wall
R27	55	56	B (67)	None	No wall
R28	56	57	B (67)	None	No wall
R29	52	54	B (67)	None	No wall
R30	49	51	B (67)	None	No wall
R31	62	63	C (72)	None	No wall

2.20.4 Avoidance, Minimization, and/or Noise Abatement Under NEPA

A five dBA reduction in the future noise level must be achieved for an abatement measure to be considered feasible. Therefore, replacing the existing soundwall is not considered feasible and no further noise abatement measures are considered.

2.20.5 Construction Noise

2.20.6 Affected Environment

During the construction phases of the proposed project, noise from construction activities may intermittently dominate the noise environment in the immediate area of construction.

Table 2-13.3 summarizes noise levels produced by construction equipment that is commonly used on roadway construction projects. As indicated, equipment involved in construction is expected to generate noise levels ranging from 70 dB to 90 dB at a distance of 50 ft. Noise produced by construction equipment would be reduced over distance at a rate of about 6 dB per doubling of distance. No substantial noise impacts from construction are anticipated because construction activity would be conducted in accordance with Caltrans Standard Specifications and would be short-term, intermittent, limited in physical extent, and in most cases dominated by local traffic noise.

Table 26 Construction Equipment Noise

Type of Equipment	***Maximum Level, dBA at 50 ft***
Scrapers	*89*
Bulldozers	*85*
Heavy trucks	*88*
Backhoe	*80*
Pneumatic tools	*85*
Concrete pump	*82*
Source: Federal Highway Administration 1995.	

2.20.7 Environmental Consequences

Table 25 lists the results of noise modeling for existing levels and design year noise levels. No receivers in the project vicinity will experience an increase of 12 dB or more

2.20.8 Avoidance, Minimization, and/or Mitigation Measures

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

2.21 Energy

2.21.1 Regulatory Setting

CEQA Guidelines, Appendix F, Energy Conservation, state that Environmental Impact Reports are required to include a discussion of the potential energy impacts of proposed projects, with particular emphasis on avoiding or reducing inefficient, wasteful, and unnecessary consumption of energy.

NEPA requires the identification of all potentially significant impacts to the environment, including energy impacts.

2.21.2 Affected Environment

I-5 and I-80 play a critical role in California's economy by supporting a high volume of commuter and interregional traffic as well as trucks moving goods to destinations in and outside the state.

2.21.3 Environmental Consequences

The Build Alternatives would result in a temporary increase in energy consumption during construction of the project, including fuel necessary for the movement of equipment, materials, and personnel to the project site, fuel for the operation of equipment, and lighting for night work.

However, the Build Alternatives would ultimately reduce energy demand by easing congestion and improving traffic flow within the I-5/I-80 interchange, which would in turn increase fuel efficiency and reduce energy demand. The HOV element of the project would also encourage ridesharing, further reducing energy demand. Therefore, the Build Alternatives will not have any direct, indirect, short-term, long-term, or unavoidable impacts on energy demand or resources. When balancing energy used during construction and operation against energy saved by relieving congestion and other transportation inefficiencies, the project would not result in substantial energy impacts.

Alternative 2—No Build Alternative

Alternative 2 would not encourage ridesharing, increase fuel efficiency, or reduce energy demand.

2.21.4 Avoidance, Minimization, and/or Mitigation Measures

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

2.22 Biological Environment

2.22.1 Natural communities

This section of the document discusses natural communities of concern. The focus of this section is on biological communities, not individual plant or animal species. Wildlife corridors are areas of habitat used by

wildlife for seasonal or daily migration. Habitat fragmentation involves the potential for dividing sensitive habitat and thereby lessening its biological value. Due to the urban location of the project area, wildlife corridors and habitat fragmentation are not an issue, thus no further discussion of that is required.

Habitat areas that have been designated as critical habitat under the Federal Endangered Species Act are discussed in the Threatened and Endangered Species Section 2.26. Wetlands and other waters are discussed in Section 2.23.

The CNDDB identified four natural communities of special concern that could occur in the project vicinity: Great Valley Cottonwood Riparian Forest, Northern Claypan Vernal Pool, Northern Hardpan Vernal Pool, and Coastal and Valley Freshwater Marsh. Only Great Valley Cottonwood Riparian Forest and Coastal and Valley Freshwater Marsh occur within the project area.

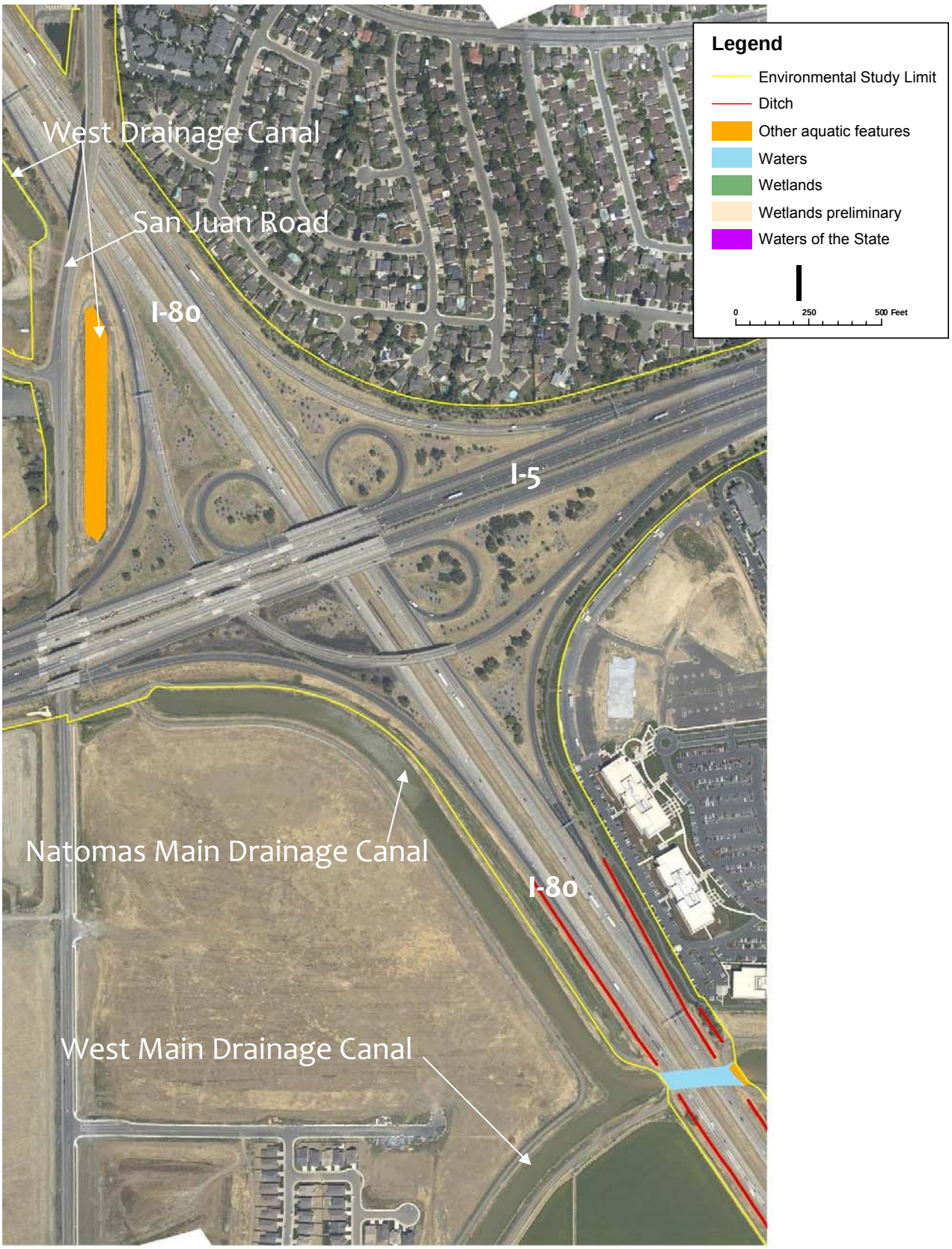
2.22.2 Affected Environment

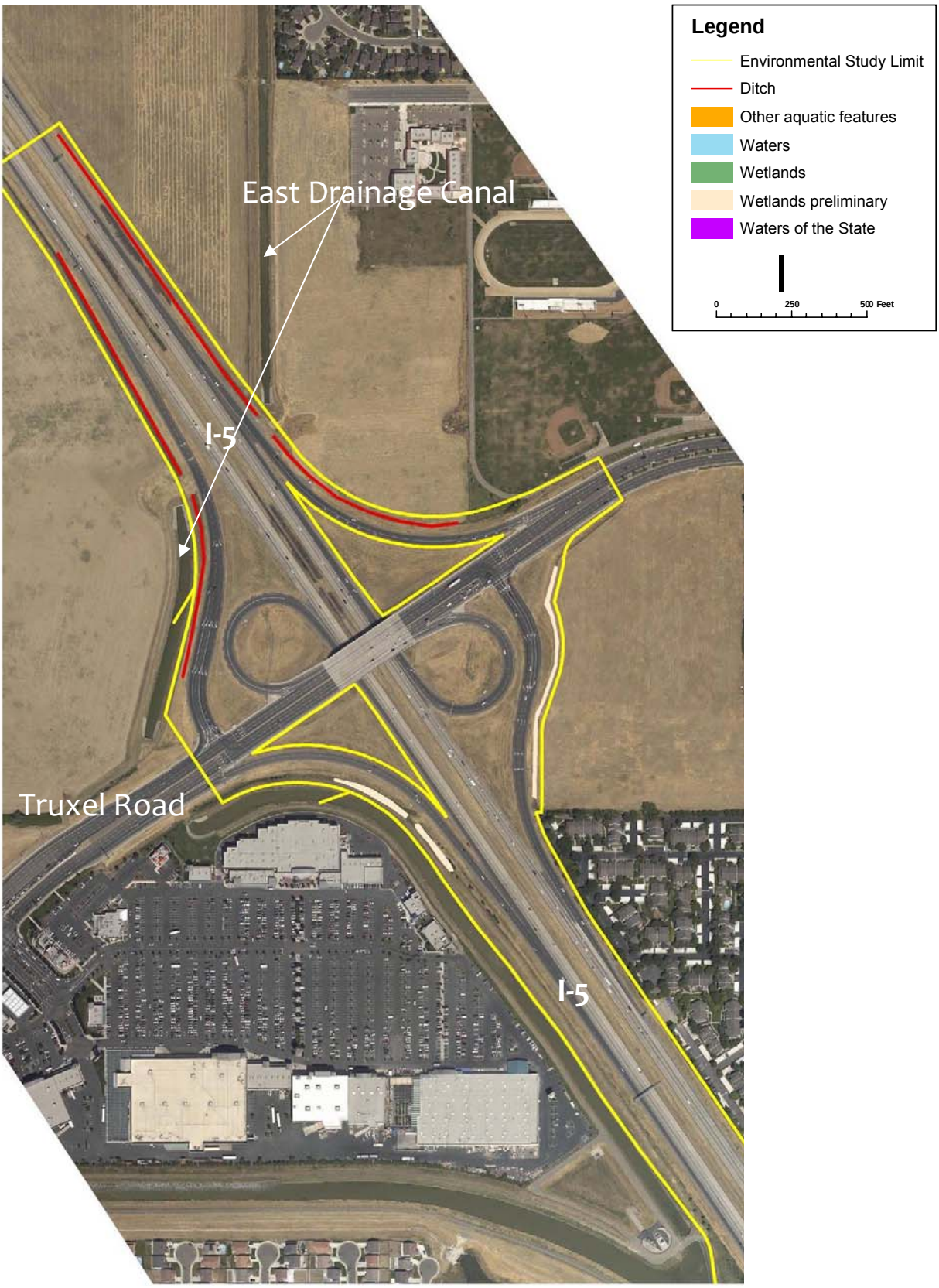
The climate in the project vicinity is characterized as Mediterranean with average temperatures ranging from lows in the 30's (Fahrenheit) in January to highs in the 90's in July. The average annual precipitation for the area is from 17 to 19 inches. The rainy season is defined as October 15th to April 15th.

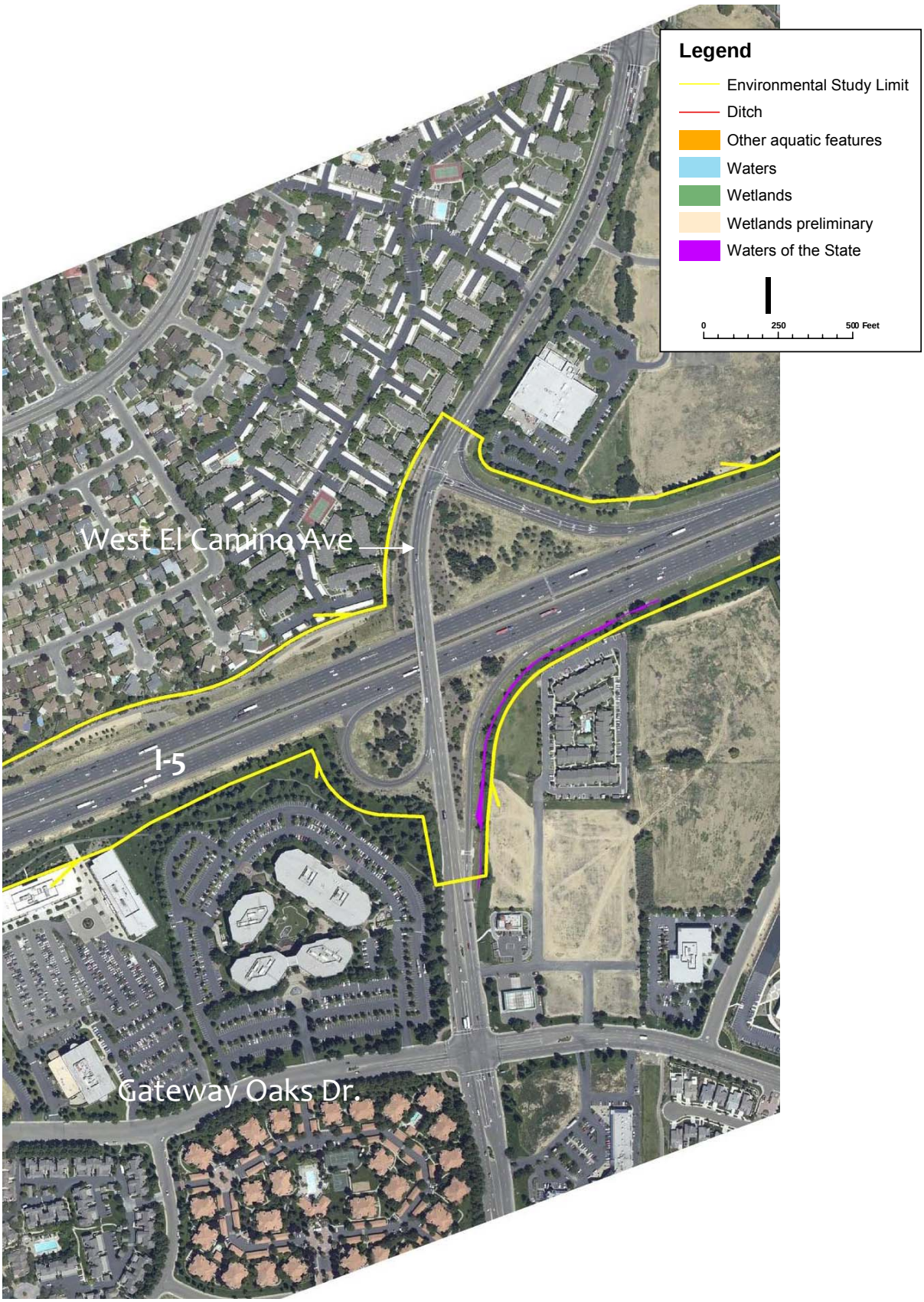
The topography within the project area is generally flat to rolling hills. Elevation is four to 24 feet above mean sea level. South of the project, land use is primarily urban and to the north is farmland transitioning to urban land uses. The dominant plant community within the environmental study limit (ESL) is non-native annual grassland. The environmental study limits are shown in Figure 15.

The existing highway crosses three man-made watercourses; the Natomas East Main Drainage Canal (DC) classified as a freshwater forested/shrub wetland; the East Natomas DC, classified as freshwater emergent wetland, riverine, and freshwater pond, and the West Natomas DC, classified as a riverine wetland. The Natomas East Main DC is tributary to the Sacramento River, emptying into the river just upstream of the confluence with the American River. All three drainage canals within the environmental study limits (ESL) are contained within earthen levees. There are no natural streams within the project area.

Figure 15 Environmental Study Limits


West Drainage Canal
San Juan Road
I-80
I-5
Natomas Main Drainage Canal
I-80
West Main Drainage Canal
Legend
Environmental Study Limit
Ditch
Other aquatic features
Waters
Wetlands
Wetlands preliminary
Waters of the State
0
250
500 Feet


Legend
Environmental Study Limit
Ditch
Other aquatic features
Waters
Wetlands
Wetlands preliminary
Waters of the State
0
250
500 Feet
East Drainage Canal
I-5
Truxel Road
I-5


Legend
Environmental Study Limit
Ditch
Other aquatic features
Waters
Wetlands
Wetlands preliminary
Waters of the State
0
250
500 Feet
West El Camino Ave
I-5
Gateway Oaks Dr.

2.22.2.1 Great Valley Cottonwood Riparian Forest

Great Valley Cottonwood Riparian Forest is a mature riparian forest with 20 to 80 percent canopy cover. The dominant tree species in this habitat type is the Fremont cottonwood with associate species such as California sycamore, valley oak, white alder, boxelder, and Oregon Ash. This habitat type occurs at the southernmost end of the project under the I-5 bridge over Discovery Park.

2.22.2.2 Coastal and Valley Freshwater Marsh

Coastal and Valley Freshwater Marshes are a permanently flooded, regularly flooded, semi-permanently flooded, seasonally flooded, irregularly flooded, or irregularly exposed habitat with emergent wetland vegetation and freshwater. A valley freshwater emergent wetland is located in the ESL on the south side of the Truxel off-ramp. Potential impacts to this habitat type are discussed along with the impacts to other wetland types below.

2.22.3 Environmental Consequences

The project work in this area is limited to changing the lane lines on the bridge deck and there will be no ground disturbing activities in this area of the project, thus Great Valley Cottonwood Riparian Forest habitat will not be affected.

Potential impacts to Coastal and Valley Freshwater Marsh habitat type are discussed along with the impacts to other wetland types below.

2.22.4 Avoidance, Minimization, and/or Mitigation Measures

No impacts to Great Valley Cottonwood riparian forest are expected, thus no avoidance, minimization, or mitigation measures are required. Impacts to Coastal and Valley Freshwater Marsh are discussed in the Wetland Section below.

2.23 Wetlands and Other Waters of the United States

2.23.1 Regulatory Setting

Wetlands and other waters of the United States are protected under a number of laws and regulations. At the federal level, the Clean Water Act (33 U.S.C. 1344) is the primary law regulating wetlands and waters. The Clean Water Act regulates the discharge of dredged or fill material into Waters of the United States (US), including wetlands. Waters of the US 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 water loving vegetation, wetland hydrology, and hydric soils (soils subject to 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 no discharge of dredged or fill material can be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. The Section 404 permit program is run by the U.S. Army Corps of Engineers (USACE) with oversight by the Environmental Protection Agency (EPA).

The Executive Order for the Protection of Wetlands (E.O. 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, this executive order states that a federal agency, such as the Federal Highway Administration, 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.

The term "Waters of the State" captures all the various aquatic resources regulated by numerous state agencies including the Department of Fish and Game (CDFG) and the Regional Water Quality Control Boards (RWQCB). In certain circumstances, the Coastal Commission (or Bay Conservation and Development Commission) may also be involved. "Waters of the State" includes rivers, streams, lakes, wetlands, mudflats, vernal pools, and other aquatic sites. At the state level, wetlands and waters are regulated primarily by the Sections 1600-1607 of the 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 CDFG before beginning construction. If DFG determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement will be required. CDFG jurisdictional limits are usually defined by the tops of the stream or lake banks, or the outer edge of riparian vegetation, whichever is wider. Wetlands under jurisdiction of the USACE may or may not be included in the area covered by a Streambed Alteration Agreement obtained from the CDFG.

The Regional Water Quality Control Boards were established under the Porter-Cologne Water Quality Control Act to oversee water quality. The RWQCB also issues water quality certifications in compliance with Section 401 of the Clean Water Act. Please see the Water Quality section for additional details.

2.23.2 Affected Environment

The portion of the project along I-80 from West El Camino Road to the I-5/I-80 interchange and from the interchange to Truxel Road received an Approved Jurisdictional Determination on September 18, 2007 (USACE# 200700309). A delineation of potential Wetlands and Other Waters of the US within the remaining portion of the ESL was conducted on July 10, 2007, September 25, 2007, and September 9, 2008 by Caltrans biologists. The delineation was conducted in accordance with the routine on-site methods described in the USACE *Interim Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2006). Seasonal wetlands, a perennial wetland, and Other Waters of the US were delineated within the ESL.

There are four areas of seasonal wetlands within the ESL. Two intermittent ditches with seasonal wetland vegetation, each approximately 3,400 feet long, are located within the ESL. These consist of the unlined ditches adjacent to the eastbound and westbound shoulders of I-80 between West El Camino Avenue and the

I-5 interchange. The channel bottom is approximately 2 feet wide. These ditches receive water from highway and agricultural runoff. Vegetation is dominated by non-native grassland species including wild oats, Harding grass, Johnson grass, dallis grass, chicory, wild radish, bindweed, and alkali-mallow. Small stands and individuals of bristly ox-tongue and curly dock occur in and near the bottom of the ditch. One small stand of cattails occurs at one location in the ditch adjacent to the eastbound shoulder that receives runoff from an adjacent agricultural field. Two willows, one Fremont cottonwood, and a peach tree occur in these ditches.

There is a seasonal wetland area in a roadside ditch adjacent to southbound I-5 between the West El Camino on-ramp and the Garden Highway off-ramp. This area collects water from highway runoff as well as from adjacent landscape watering. The vegetation is dominated by barnyard grass. There is no outlet from this wetland; it is an isolated feature.

The final seasonal wetland is located along SB I-5 immediately north of the I-5/I-80 interchange. This area collects rainwater and runoff from the freeway and drains to the West Natomas DC. The seasonal wetlands within the ESL occur along the road shoulder. The three canals within the ESL: the East Natomas DC, West Natomas DC, and the Natomas East Main DC are operated and maintained by the Reclamation District 1000 and are assumed to provide habitat for the federally threatened giant garter snake. There is a freshwater emergent wetland south of the offramp of EB I-80 at Truxel. An isolated seasonal wetland is present adjacent to the WB on-ramp to I-5 at West El Camino. This feature is a Water of the State but is not a Waters of the US (See Figure 15).

2.23.3 Enviromental Consequences

The I-80 HOV (E.A. 03-37970) project is a separate project constructing HOV lanes along I-80 within, and extending beyond the boundaries of this project. All wetlands that could be impacted by this project will be impacted by the proposed I-80 HOV project, if it is constructed first. Because of this overlap in impacts of proposed projects, impact acreages and mitigation will be finalized when the application for the Clean Water Act Section 404 permit is submitted. Below are the estimated impacts for this project:

Common Impacts of Build Alternatives

All build alternatives include the following impacts to sensitive resources:

- 0.004 acres permanent impacts to seasonal wetlands along I-80 between the West El Camino on-ramp and the I-5/I-80 interchange.

- 0.223 acres of permanent impacts to jurisdictional roadside ditches along I-80 between West El Camino and the I-5/I-80 interchange.

Alternative 1A

Alternative 1A includes all common impacts listed above. There are no additional impacts to sensitive resources from this Alternative.

Alternative 1B

Alternative 1B includes all common impacts listed above. There are no additional impacts to sensitive resources from this Alternative.

Alternative 1C

The footprint of this alternative is identical to that of 1A but some elements of the project will be postponed. This will postpone impacts to 0.004 acres of seasonal wetlands and 0.168 acres of jurisdictional roadside ditches.

Alternative 2- No Build

This alternative would not impact Wetlands or Other Waters of the United States.

2.23.4 Avoidance and Minimization Measures

The proposed project footprint was designed to minimize the addition of paved and disturbed areas where possible. The proposed interchange modification includes flyover connectors which have a much smaller footprint than standard ramp connectors, decreasing potential impacts to wetlands. Work within bridge areas, with the exception of the San Juan Bridge, has been designed within the limits of the existing structures.

In order to avoid permanent impacts to the East Natomas DC, the replacement of the San Juan Bridge was redesigned to follow the existing alignment. This design change avoided 0.006 acres of impacts to the East Natomas DC which is classified as 'Other Waters of the US and under the jurisdiction of the USACE.

Roadside ditches that are affected by this project will be re-graded at the toe of slope of the widened structure.

Environmentally Sensitive Areas (ESAs) will be identified around Wetlands and Other Waters of the US that will not be affected by the project. ESA fencing will be installed to prevent unintentional impacts to these areas.

2.23.5 Mitigation Measures

Impacts to jurisdictional Wetlands and Other Waters of the US will be mitigated for at a 1:1 ratio at an USACE approved mitigation bank. An estimated 0.227 acres or mitigation credits will be required to mitigate for project impacts.

2.24 Plant Species

2.24.1 Regulatory Setting

The U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Game (CDFG) share regulatory responsibility for the protection of special-status plant species. "Special-status" species are selected for protection because they are rare and/or subject to population and habitat declines. Special status is a general term for species that are afforded varying levels of regulatory protection. The highest level of

protection is given to threatened and endangered species; these are species that are formally listed or proposed for listing as endangered or threatened under the Federal Endangered Species Act (FESA) and/or the California Endangered Species Act (CESA). Please see Threatened and Endangered Species, Section 2.26 in this document for detailed information regarding these species.

This section of the document discusses all the other special-status plant species, including CDFG fully protected species and species of special concern, USFWS candidate species, and non-listed California Native Plant Society (CNPS) rare and endangered plants.

The regulatory requirements for FESA can be found at United States Code 16 (USC), Section 1531, et seq. See also 50 CFR Part 402. The regulatory requirements for CESA can be found at California Fish and Game Code, Section 2050, et seq. Caltrans projects are also subject to the Native Plant Protection Act, found at Fish and Game Code, Section 1900-1913, and CEQA, Public Resources Code, Sections 2100-21177.

2.24.2 Affected Environment

Caltrans prepared a Natural Environment Study Report in October 2009. A copy is available for review at 2800 Gateway Oaks Dr., Sacramento, CA, 95833 during normal business hours.

A list of species and habitats potentially occurring within the project vicinity was developed based on information compiled from the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Game's Natural Diversity Data Base (CNDDB), and the California Native Plant Society (CNPS).

Caltrans biologists conducted field surveys of the project site between April 2006 and May 2009 to assess existing natural resources and potential impacts. The project site was reviewed to identify habitat types and potential wetlands, identify factors indicating the potential for rare species or the presence of rare species, and identify potential problems for the study.

2.24.2.1 Special Status Plant Species

No special status plants were observed during field visits. Based on the habitats present within the ESL, no special status plants are anticipated to occur within the ESL or be affected by the proposed project.

2.24.3 Environmental Consequences

No special status plants were observed during field visits.

2.24.4 Avoidance, Minimization, and/or Mitigation Measures

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

2.25 Animal Species

2.25.1 Regulatory Setting

Many state and federal laws regulate impacts to wildlife. The U.S. Fish and Wildlife Service (USFWS), the National Oceanic and Atmospheric Administration (NOAA) Fisheries and the California Department of Fish and Game (CDFG) are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with wildlife not listed or proposed for listing under the state or federal Endangered Species Act. Species listed or proposed for listing as threatened or endangered are discussed in Section 2.26. All other special-status animal species are discussed here, including CDFG fully protected species and species of special concern, and USFWS or NOAA Fisheries candidate species.

Federal laws and regulations pertaining to wildlife include the following:

- NEPA.
- Migratory Bird Treaty Act.
- Fish and Wildlife Coordination Act.

State laws and regulations pertaining to wildlife include the following:

- CEQA.
- Sections 1600 – 1603 of the Fish and Game Code.
- Section 4150 and 4152 of the Fish and Game Code.

2.25.2 Burrowing Owls *(Athene cunicularia)*

Burrowing owls are a State Species of Concern and have shown decreasing populations over the last 60 years with an increase in the rate of decline over the last 20 years (CDFG 2005). This species is a yearlong resident of open, dry grassland habitats. They hunt from perches, hover, hawk, dive, and hop after prey on ground. Roosting and nesting occurs in existing rodent or other animal burrows. Their population decline is attributed to loss of habitat due to residential and commercial developments, conversion of grasslands to agriculture, and ground squirrel poisoning.

2.25.3 Affected Environment

Burrowing owls were observed within the ESL in the northeastern loop ramp of the Truxel and I-80 interchange on July 12, 2007 and May 13, 2009. Though the owls were not directly observed in any other portion of the ESL, there is suitable habitat present and it is likely that they are present in other areas of the ESL. There is a possibility that burrowing owls, Swainson's hawks, and giant garter snakes are present within the ESL and may be affected by this project. The status and potential impact to burrowing owls are discussed below. Swainson's hawks is a State listed species and the giant garter snake is a Federal and State listed species, thus are discussed in Section 2.26.

2.25.4 Environmental Consequences

This project will not directly affect the area where burrowing owls have been observed but will impact approximately 9.85 acres of habitat along the road shoulders due to the roadway widening. This acreage is comprised of twelve foot wide sections adjacent to the freeway. Though these areas provide potential habitat, they are not ideal habitat for the owl due to the proximity to the freeway travel lanes and lack of cover, and may not be inhabited. The loss of this habitat will not greatly impact this species. Preconstruction surveys for burrowing owls will greatly decrease the likelihood that this project will cause any direct mortality of this species.

2.25.5 Avoidance and Minimization Measures

A qualified biologist shall survey suitable habitat in the ESL and adjacent areas for burrowing owls no more than 30 days prior to the start of construction. If burrowing owls or signs of burrowing owls are detected, CDFG shall be contacted to determine the best course of action.

2.25.6 Mitigation Measures

No mitigation measures are required.

2.26 Threatened and Endangered Species

2.26.1 Regulatory Setting

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

Opinion or an incidental take permit. Section 3 of FESA defines take as "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or any attempt at such conduct."

California has enacted a similar law at the state level, the California Endangered Species Act (CESA), California Fish and Game Code, Section 2050, et seq. CESA emphasizes early consultation to avoid potential impacts to rare, endangered, and threatened species and to develop appropriate planning to offset project caused losses of listed species populations and their essential habitats. The California Department of Fish and Game (CDFG) is the agency responsible for implementing CESA. Section 2081 of the Fish and Game Code prohibits "take" of any species determined to be an endangered species or a threatened species. Take is defined in Section 86 of the Fish and Game Code as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." CESA allows for take incidental to otherwise lawful development projects; for these actions an incidental take permit is issued by CDFG. For projects requiring a Biological Opinion under Section 7 of the FESA, CDFG may also authorize impacts to CESA species by issuing a Consistency Determination under Section 2080.1 of the Fish and Game Code.

2.26.2 Swainson's Hawk *(Buteo swainsoni)*

The Swainson's hawk is a State threatened species, but has no federal status. Swainson's hawks were once found throughout lowland California and were absent only from the Sierra Nevada, north Coast Ranges and Klamath Mountains, and portions of the desert regions of the state. Today, Swainson's hawks are restricted to portions of the Central Valley and Great Basin regions where suitable nesting and foraging habitat is still available. Central Valley populations are centered in Sacramento, San Joaquin, and Yolo counties.

Swainson's hawks require large, open grasslands with abundant prey in association with suitable nest trees. The diet of the Swainson's hawk is varied with the California vole being the staple in the Central Valley. Suitable foraging areas include native grasslands or lightly grazed pastures, alfalfa and other hay crops, and certain grain and row croplands. Unsuitable foraging habitat includes any crop where prey are not available due to the high density of vegetation, or where there is a low abundance of prey such as vineyards, orchards, certain row crops, rice, corn and cotton crops. Under natural conditions, Swainson's hawks likely foraged in upland and seasonally flooded perennial grasslands. These habitats are largely extirpated from the Central Valley today, replaced by annual grasslands with low prey populations, and agricultural crops. These changes have resulted in Swainson's hawks being dependent on landscape elements almost entirely controlled by human activities, with frequent shifts in agricultural practices and habitat quality.

Swainson's hawks often nest at the edge of riparian ecosystems in the valley as well as in lone trees or groves of trees in agricultural fields and mature roadside trees. Valley oak, Fremont cottonwood, walnut, and large willow with an average height of about 58 feet, and ranging from 41 to 82 feet, are the most commonly used nest trees in the Central Valley. Nesting Swainson's hawks are somewhat tolerant of human activity, particularly in areas where activity is regular and individual pairs are able to habituate to it. Nest sites are

sometimes located near roads and houses, and frequently near field edges where crop cultivation activities regularly occur. However, changes in activity regime (e.g., construction in previously open areas, human intrusion at nest site) frequently cause nest abandonment, particularly during the pre-nesting, egg-laying, and incubation stages of the reproductive cycle.

Within California, Swainson's hawks begin nesting in late March and the young usually leave the nest (fledge) by July. Two to four eggs are laid at 2-day intervals and incubation lasts between 25 and 36 days. The young will leave the nest between 33 and 37 days after hatching and begin to kill insects and snakes on their own.

Threats to this species include loss of nesting habitat, loss of prey due to some farming practices, and insecticide poisoning. Swainson's hawks are also a covered species under the Natomas Basin Habitat Conservation Plan (NBHCP). The loss of agricultural lands to various residential and commercial developments is a serious threat to Swainson's hawks throughout California.

2.26.3 Affected Environment

No Swainson's hawk's nests were observed within the ESL though there are two known nest trees within a quarter mile of the ESL. Caltrans biologists observed Swainson's hawks foraging north of I-80 within the ESL during the months of March through August. The vegetated highway shoulders along I-80 west of the I-5/I-80 interchange and to the north of I-80 east of the I-5/I-80 interchange and those along I-5 north of the I-5/I-80 interchange are considered foraging habitat for this species. The foraging habitat within the ESL is comprised of ruderal habitat which is managed for fire suppression by regular mowing. Though Swainson's hawks forage on the road shoulders, these areas do not provide optimal foraging habitat.

2.26.4 Environmental Consequences

There are approximately 89.93 acres of Swainson's hawk foraging habitat in the Study Area, of which, this project will permanently impact approximately 9.85 acres. CESA consultation with the CDFG will be required.

The foraging habitat that would be impacted is comprised of ruderal grassland habitat in the road shoulders of I-80 and I-5 and small areas of oak savanna habitat within the I-5/I-80 interchange.

2.26.5 Avoidance and Minimization Measures

The project design avoids impacts to nesting habitat of this species. The proposed interchange modification includes flyover connectors which have a much smaller footprint than standard ramp connectors which decreased the impact to Swainson's hawk foraging habitat. Due to the extended period of time between the circulation of this document and construction of the project, surveys will be conducted by a qualified biologist with sufficient time prior to construction to consult with CDFG regarding a 2080.1 Incidental Take Permit if any Swainson's hawks have begun nesting within the ESL and the nest tree will be affected by the project.

2.26.6 Mitigation Measures

Compensatory mitigation for impacts to Swainson's hawk foraging habitat will follow the "Staff Report Regarding Mitigation for Impacts to Swainson's Hawks in the Central Valley of California (DFG, 1994)." As outlined in this document, impacts to foraging habitat shall be mitigated for at a 1:1 ratio for impacts within one mile of an active nest. Impacts are currently estimated at 9.85 acres within one mile of an active nest. Based on these amounts, 9.85 acres of Swainson's hawk foraging habitat mitigation will be needed.

2.26.7 Giant Garter Snake *(Thamnophis gigas)*

The giant garter snake is a federal and state threatened species inhabiting marshes, sloughs, ponds, small lakes, low gradient streams, and other waterways. This species also frequents agricultural wetlands such as irrigation and drainage canals and rice fields, and the adjacent uplands. Essential habitat consists of the following components: 1) adequate water during the snake's active period (i.e., early spring through mid-fall) to provide a prey base and cover; 2) emergent, herbaceous wetland vegetation, such as cattails and bulrushes, for escape cover and foraging habitat; 3) upland habitat within 200 feet of aquatic habitat for basking, cover, and retreat sites; and 4) higher elevation uplands for cover and refuge from flood waters. Giant garter snakes feed primarily on small fishes, tadpoles, and frogs.

Current threats that contribute to the decline of giant garter snake throughout its range are habitat loss, habitat fragmentation, predation by introduced species, parasites, and water pollution. Habitat loss and fragmentation are commonly caused by flood control activities and changes in agricultural and other land management practices. No critical habitat has been designated for this species. The giant garter snake is also covered in the NBHCP.

2.26.8 Affected Environment

No surveys were conducted to confirm the presence of giant garter snake within the ESL. Potential aquatic habitat for this species was identified during initial site visits. Presence of this species is assumed based on the presence of aquatic habitat and the close vicinity of multiple known occurrences in waterways which continue into the ESL. As this species is known to travel more than eight miles of linear habitat over the course of a few months (Wylie and Martin 2004) it is prudent to assume that the giant garter snake are present within the ESL.

A total of 1.53 acres of giant garter snake aquatic habitat is present in the ESL. This acreage is comprised of drainage ditches with perennial flow. A total of 22.58 acres of giant garter snake upland habitat are present in the ESL. This acreage is comprised of ruderal grasslands within 200 feet of giant garter snake aquatic habitat. Paved areas within 200 feet of aquatic habitat are not considered giant garter snake habitat.

All giant garter snake upland habitat within the ESL is located between the Natomas drainage canals and the I-5 and I-80 freeways and provides marginal habitat value. While it is likely that giant garter snake travel

through this area and may use the banks as basking or upland refugia habitat, they tend to be a reclusive snake and the high traffic volumes present on these roads make these areas less desirable to the snake.

2.26.9 Environmental Consequences

The proposed project will temporarily impact 3.83 acres and permanently impact 1.76 acres of giant garter snake upland habitat. The project will not impact any giant garter snake aquatic habitat. The areas of upland habitat that the proposed project will impact are ruderal grasslands between the Natomas drainage canals and I-5 and I-80.

2.26.10 Avoidance and Minimization Measures

Environmental study areas (ESAs) will be established and marked by highly visible ESA fencing prior to the start of construction within giant garter snake potential habitat areas. These areas will separate the work area from the remaining giant garter snake upland habitat and the giant garter snake aquatic habitat. Contractor encroachment, including the staging/operation of heavy equipment or casting of excavation materials, into ESAs will be prohibited. ESA provisions shall be implemented as a first order of work, and remain in place until all construction activities are complete. Due to the extended period of time between the circulation of this document and construction of the project, surveys will be conducted by a qualified biologist with sufficient time prior to construction to consult with CDFG regarding a 2080.1 Incidental Take Permit.

The following measures listed in the "Standard Avoidance and Minimization Measures During Construction Activities in Giant Garter Snake *(Thamnophis gigas)* Habitat" (USFWS 2005a) outlined below.

1) When feasible, avoid construction activities within 200 feet from the banks of giant garter snake aquatic habitat. Confine movement of heavy equipment to existing roadways to minimize habitat disturbance.

2) Construction activity within habitat should be conducted between May 1 and October 1. This is the active period for giant garter snakes and direct mortality is lessened, because snakes are expected to actively move and avoid danger. Between October 2 and April 30 contact the Service's Sacramento Fish and Wildlife Office to determine if additional measures are necessary to minimize and avoid take.

3) Confine clearing to the minimal area necessary to facilitate construction activities. Flag and designate avoided giant garter snake habitat within or adjacent to the project area as ESAs, as outlined above. These areas should be avoided by all construction personnel.

4) Construction personnel should receive Service-approved worker environmental awareness training. This training instructs workers to recognize giant garter snakes and their habitat(s).

5) 24-hours prior to construction activities, the ESL will be surveyed for giant garter snake. Surveys of the ESL will be repeated if a lapse in construction activity of two weeks or greater has occurred. If a snake is encountered during construction, activities shall cease until appropriate corrective measures have been completed or it has been determined that the snake will not be harmed. Report any sightings and any incidental take to the Service immediately by telephone at (916) 414-6600.

6) Any dewatered habitat should remain dry for at least 15 consecutive days after April 15 and prior to excavating or filling of the dewatered habitat.

7) After completion of construction activities, remove any temporary fill and construction debris and, wherever feasible, restore disturbed areas to pre-project conditions. Restoration work may include such activities as replanting species removed from banks or replanting emergent vegetation in the active channel.

8) Follow the conservation measures in Table 27 to minimize the effects of loss and disturbance of habitat on giant garter snakes. Replacement ratios are based on the acreage and on the duration of disturbance.

Table 27 Summary of Giant Garter Snake Conservation Measures

EFFECTS:	EFFECTS:	CONSERVATION MEASURE:
Temporary (1 season)	Temporary impacts will not exceed 20 acres and no permanent impacts.	Restoration
Temporary (2 seasons)	Temporary impacts will not exceed 20 acres and no permanent impacts.	Restoration plus 1:1 replacement
Temporary (More than 2 seasons)	Temporary impacts will not exceed 20 acres and no permanent impacts.	3:1 Replacement (or restoration plus 2:1 replacement)
Permanent loss	The project will not exceed three acres of giant garter snake habitat and will impact less than one acre of aquatic habitat.	3:1 Replacement

Giant garter snake habitat includes two acres of surrounding upland habitat for every one acre of aquatic habitat. The two acres of upland habitat also may be defined as 218 linear feet of bankside habitat that incorporates adjacent uplands to a width of 200 feet from the edge of each bank. Each acre of created aquatic habitat should be supported by two acres of surrounding upland habitat. Compensation may include creating upland refuges and locations for the snake to hibernate for the giant garter snake that are above the 100-year floodplain. A season is defined as the calendar year period between May 1 and October 1, the active period for giant garter snake when mortality is less likely to occur.

Giant Garter Snake Habitat Restoration: Following project completion, all areas temporarily disturbed during construction will be restored following the "Guidelines for Restoration and/or Replacement of Giant Garter Snake Habitat", outlined below.

1) Re-grade the area to pre-project contour, or a contour that would improve restoration potential of the site.

2) Replant and hydroseed the restoration area. Recommended plantings consist of a) wetland emergents, b) low-growing cover on or adjacent to banks, and c) upland plantings/hydroseeding mix to encourage use by other wildlife. Riparian plantings are not appropriate because shading may result in lack of basking sites. Native plantings are encouraged except where non-natives will provide additional values to wildlife habitat and will not become invasive in native communities.

3) Emergent wetland plants recommended for giant garter snake habitat are California bulrush, cattail, and water primrose. Additional wetland plantings may include common tule, Baltic rush or duckweed.

4) Cover species on or adjacent to the bank may include California blackberry or California wild grape along with the hydroseeding mix recommended below.

5) Upland plantings/hydroseeding mix: Disturbed soil surfaces such as levee slopes should be hydroseeded to prevent erosion. The Service recommends a mix of at least 20-40 percent native grass seeds such as annual fescue, California brome, blue wild rye, and needle grass; 2-10 percent native forb seeds, five percent rose clover and five percent alfalfa. Approximately 40-68 percent of the mixture may be non-aggressive European annual grasses such as wild oats, wheat and barley. Aggressive non-native grasses will not be included in the hydroseed mix. Mixes of one hundred percent native grasses and forbs may also be used, and are encouraged.

2.26.11 Mitigation Measures

Compensatory mitigation shall be determined according to the "Standard Avoidance and Minimization Measures During Construction Activities in Giant Garter Snake *(Thamnophis gigas)* Habitat" (USFWS 2005a) as outlined in Table 27.

Temporary impacts are expected to last for one season and the disturbed area will be revegetated following the measures outlined above.

Permanent impacts will be compensated for at a 3:1 ratio. A total of 5.28 acres of giant garter snake upland habitat mitigation will be required to fully compensate for project impacts. All mitigation will be completed within the Sacramento River watershed and will be approved by USFWS.

2.27 Migratory Bird Treaty Act

2.27.1 Regulatory Setting

The federal Migratory Bird Treaty Act (MBTA) of 1918 (16 USC 703-711) makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR Part 10, including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). If impacts to active nests or individual birds are expected, Caltrans shall consult with USFWS regarding appropriate action to comply with the Migratory Bird Treaty Act of 1918.

2.27.2 Affected Environment

Potential nesting habitat for migratory birds includes the Great Valley Cottonwood Riparian Forest communities that occur at the southernmost end of the project under the I-5 bridge over Discovery Park. In addition, nineteen acres of ornamental vegetation planted in the median of the on and off-ramps serve as nesting, perching and foraging for migratory birds.

2.27.3 Environmental Consequences

No impacts to the Great Valley Cottonwood Riparian Forest are expected. Nineteen acres of ornamental vegetation, including trees, will be removed for construction.

The project will not result in permanent impacts to migratory birds with the implementation of the avoidance and minimization measures outlined below.

2.27.4 Avoidance and Minimization Measures

The following avoidance and minimization measures will be implemented to minimize potential effects to special-status animal species:

01 – Establish Environmentally Sensitive Areas
02 – Limit Vegetation Removal
03 – Containment Measures/Construction Site Best Management Practices
04 – Minimize Disturbance to Jurisdictional Waters
05 – Restore Wetland, Riparian, and Stream Habitat Disturbed by Construction
06 – Dewatering Activities
07 – Restrict Timing of In-Stream Activities
09 – Restrict Timing of Woody Vegetation Removal
10 – Nesting Bird Surveys
11 – Pre-construction Pond Turtle Surveys
12 – Pre-construction Burrowing Owl Surveys
15 – Pre-construction Roosting Bat Surveys
16 – Bird and Bat Exclusion Measures

2.27.5 Mitigation Measures

No mitigation measures are required.

2.28 Invasive Species

2.28.1 Regulatory Setting

On February 3, 1999, President Clinton signed EO 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 noxious weed list to define the invasive plants that must be considered as part of the National Environmental Policy Act analysis for a proposed project.

2.28.2 Affected Environment

Yellow star-thistle is present within the ESL and is the California Invasive Plants Council (Cal-IPC) highest removal priority. Black mustard, field mustard, and Italian thistle are also present within the ESL and have a moderate priority for removal.

2.28.3 Environmental Consequences

There is the potential to spread these noxious weeds, however, with the avoidance and minimization efforts, the spread of these invasive species will be minimal.

2.28.4 Avoidance and Minimization Measures

In compliance with the Executive Order on Invasive Species, E.O. 13112, and subsequent guidance from the Federal Highway Administration, the landscaping and erosion control included in the project will not use species listed as noxious weeds. In areas of particular sensitivity, extra precautions will be taken if invasive species are found in or adjacent to the construction areas. These include the inspection and cleaning of construction equipment and eradication strategies to be implemented should an invasion occur.

2.28.5 Mitigation Measures

No Mitigation measures are required.

2.29 Cumulative Impacts

2.29.1 Regulatory Setting

Cumulative impacts are impacts resulting from past, present, and reasonably foreseeable future actions, combined with the potential impacts of this project. A cumulative impact 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.

CEQA Guidelines, Section 15130, describes when a cumulative impact analysis is warranted and what elements are necessary for an adequate discussion of cumulative impacts. The definition of cumulative

impacts under CEQA can be found in Section 15355 of the CEQA Guidelines. A definition of cumulative impacts under the NEPA can be found in 40 CFR, Section 1508.7 of the CEQ regulations.

2.29.2 Affected Environment

The cumulative impact study area includes the corridor around I-5 and I-80 along the project limits and "related project" areas determined from the recent past or foreseeable future that have been constructed or programmed. This analysis considers the overall cumulative effects of the proposed project when taken together with past, present, and reasonably foreseeable projects within the resource study area defined for each resource. For resources that are not affected by the proposed project, no cumulative impact analysis was performed, as the project could not contribute to a cumulative impact. The following resources are not included in this cumulative impacts analysis, because no impacts resulting from the proposed project were identified:

- Community Impacts.
- Cultural Resources.
- Geology/Soils/Seismic/Topography.
- Energy.

2.29.2.1 Transportation and Development Projects in Cumulative Impact Study Area

This section includes a summary of transportation and development projects that are most relevant to an analysis of potential cumulative impacts. The projects included here are those that are either located within or adjacent to the proposed project limits, or could be considered "related" projects—including those projects which together form the existing and planned regional network of high occupancy vehicle lanes for the Sacramento region. Table 28 lists projects that are or will be funded which are located within the vicinity of the proposed project.

Table 28 Completed or Planned Transportation and Development Projects within the Study Area

Project Name	Project Description	Year Completed or proposed construction
Transit Projects		
Downtown Sac to West Sac Streetcar	Streetcar Capital to provide starter line service	2014
Downtown Light Rail Station Enhancements	Design and construct light rail station enhancements, including better signage, lighting, pedestrian access, and ADA access to encourage greater transit usage.	2009
Northeast Corridor Enhancements	Improve alignment of Northeast Corridor LRT, upgrade the traction power system and signaling to provide limited-stop service, make enhancements to yard track and maintenance facility, and installation of communications infrastructure.	2010
Downtown-Natomas Rail Extension	This extends light rail via a single track from Downtown Sacramento to Richards Boulevard, a distance of just over 1.1 miles, but stopping short of a crossing of the American River.	2010

Project Name	Project Description	Year Completed or proposed construction
DNA Light Rail – Overall Study	Provide for additional advanced planning, value engineering, project delivery strategies, advanced conceptual engineering, and update the alternatives analysis. Project includes potential hardship right-of-way acquisition activities	2017
Downtown-Natomas-Airport Rail Extension	Extend rail from Richards Boulevard to Natomas Town Center	2017
Downtown-Natomas-Airport Rail Extension	Extend rail from Natomas Town Center to Sacramento International Airport.	2020
State Highway Projects		
I-5	HOV and auxiliary lanes from Elk Grove Boulevard to downtown Sacramento	2015
I-80	HOV lanes from RT Station (Longview) to the Yolo County line / Sacramento River (western terminus).	2015
I-5 / I-80	Reconstruct I-5/I-80 Interchange, including HOV lane connectors, and construction of HOV lanes from the I-5/I-80Interchange to downtown Sacramento	2018
I-5	Widen: add HOV lanes from I-80 to Hwy.70 / Hwy. 99. Add HOV lanes between I-80 and downtown Sacramento (CAL18410).	2020
I-5/Hwy 99	I-5 / Hwy. 99 interchange	2023
U.S. 50/Hwy 99	Oak Park Interchange, including HOV lane connectors	2027
I-5 / U.S.50	I-5 / U.S. 50 Riverfront Interchange	2029
U.S. 50 HOV	HOV lanes from Watt Ave. to Downtown Sacramento.	2020
Local Streets Projects		
Del Paso Rd.	Widen 6 lanes from El Centro Rd. to SB I-5 off-ramp.	2008
Del Paso Rd.	Widen 6 lanes from 500 feet east of Truxel Rd. to Town Center. (Complete frontage improvements and construct a raised/landscaped median).	2008
El Centro Rd.	Widen 4 lanes from Del Paso Rd. to Arena Boulevard	2008
El Centro Rd.	Widen 4 lanes from Arena Boulevard to San Juan Rd.	2008
Main Ave.	Bridge Replacement: Main Ave. Bridge over Natomas east Main Drain: replace existing 2-lanebridge with a 4-lane bridge.	2008
Ninos Pkwy.	Develop a pedestrian bike trail within the Ninos Pkwy. between San Juan Rd. and Edmonton Dr.	2008
Sacramento River Bike Trail	Construct bike trail from R St. to Miller Park and from Garcia Bend Park to south city limits along the east levee of the Sacramento River:	2008
I-80	Bike/pedestrian bridge across I-80 at the West Canal, as well as across the West Canal.	2011
Del Paso Rd.	Widen from I-5 NB off-ramp to East Commerce (north side only).	2016
I-5	Add NB auxiliary lane from Del Paso Rd. to Hwy. 99.	2016
I-5	Construct connection over I-5 between approximately Capitol Ave. to "O" St.	2016
Sacramento River Crossing	All-modal river crossing (Auto, Transit, Bike& Pedestrian) from Sacramento across the Sacramento River to West Sacramento. The crossing was modeled between Broadway in Sacramento & 15th Street in West Sacramento, but final alignment options will be studied in subsequent planning efforts. Additional 50% of estimated cost identified as a City of West Sacramento project.	2019
Lower American River Crossing	All-modal river crossing (Transit, Auto, Bike& Pedestrian) across the Lower American River between downtown Sacramento and South Natomas	2019
Northgate Boulevard	Extend Northgate Boulevard / I-80 Interchange: Extend existing I-5 WB off-ramp onto Northgate Boulevard; add auxiliary lane to WB on-ramp	2020
W. El Camino Ave./ I-80	West El Camino Interchange on I-80: Widen 4 lanes and modify ramps	2020
W. El Camino Ave.	West El Camino Interchange on I-5: new NB entrance ramp and SB exit ramp. Modify: NB I-5to I-80 ramp to accommodate the proposed interchange ramps.	2030
Metro Air Pkwy.	The County of Sacramento is planning to construct an interchange on I-5 at Metro Air Parkway, a new arterial that will serve the planned Metro Air Park development. The proposed interchange would be located about halfway between the Airport Boulevard and SR 99 interchanges.	2011
Planned Development in the Cumulative Impact Study Area		
Green Briar	Greenbriar is a 577-acre, mixed-used, transit-oriented development located at the	No date

Project Name	Project Description	Year Completed or proposed construction
	northwest corner of the junction of Interstate 5 and SR 99. 3500 residential units, 50 acres of commercial development, elementary school, 50 acres of neighborhood parks and a 40-acre lake for storm water retention. The project will have two connections with SR 99—the existing Elkhorn Boulevard and a new east west thoroughfare that will require creation of a new interchange just north of the I-5 exit.	given
Sacramento Rail Yards	The Sacramento Rail yards is a 240-acre master-planned, mixed-use development proposed for the former site of the Union Pacific rail yards in downtown Sacramento	No date given
Sacramento Intermodal Transportation Facility	The City of Sacramento is in the early planning stages to design and develop the Sacramento Intermodal Transportation Facility, to be located on the site of the Sacramento Rail yards. The facility will be located in downtown Sacramento and serve as a regional hub, transfer point, and portal.	No date given
Township 9	The Township 9 project is a mixed-use development project bounded roughly by Richards Boulevard to the south, the American River to the north, North 5th Street to the west, and North 7th Street to the east. The project will include approximately 2,700 homes along with office and retail space	No date given
Docks Area Specific Plan	The Docks Area Specific Plan would provide for a range of mixed-use development densities, including: 1,000 to 1,155 dwelling units; 200,000 to 500,000 sq ft of office space; 40,500 to 43,300 sq ft of retail space; and 1,870 to 2,920 off-street parking spaces.	No date given
North Natomas	9,000-acre mixed-use development; approximately 33,000 units.	In process

Source: Appendix A1 and A2 from the MTP 2035, http://sacog.org/mtp/2035/finaldocs/mtp/Appendices%20A-%20Project%20Lists/Appendix%20A1%20&%20A2%2010-15-08.pdf

2.29.3 Environmental Consequences

2.29.3.1 Temporary and Constructed-Related Cumulative Impacts

Traffic and Transportation

The proposed project may contribute to temporary, construction-related cumulative impacts to traffic and transportation. While project construction is not anticipated to have any substantial adverse impacts to traffic, if it is scheduled at the same time as other road and highway improvement projects or development projects, traffic could be cumulatively impacted.

Cumulative impacts related to the construction of these projects could include temporary road and lane closures, which could lead to traffic delays and impaired access to local businesses, commercial and tourist destinations, public recreational areas, and private residences. Impacts may occur throughout the Sacramento region, including the project corridor and downtown Sacramento. These impacts could adversely impact the provision of emergency services, public transportation, school buses, and other services dependent on the road and highway network.

A series of Transportation Management Plans (TMPs) should be developed to address the cumulative impacts from the multiple transportation projects listed in the SACOG MTP and other plans. Caltrans requires TMPs for all major construction activities that are expected to impact traffic on the state highway system. However, where several consecutive or linked projects within a region create a cumulative need for a TMP, Caltrans can coordinate individual TMPs. TMPs result in minimized project related traffic delay and accidents by the effective combination of public and motorist information, demand management, incident management, system management, alternate route strategies, construction strategies, and other strategies. Other strategies

may become available such as, a construction season map published to inform the public, local businesses, and local agencies of project locations and activities.

Utilities and Emergency Services

Access routes for emergency vehicles would not be affected by the proposed project. The proposed project would provide a benefit in terms of travel time on the freeway.

There is the potential for delay during the construction of the project. A TMP to address congestion will be implemented during construction that will reduce the traffic impacts during construction. The freeway and ramps will remain open during construction. TMP's developed for other projects being constructed at the same time should reduce cumulative impacts to emergency services.

Visual/Aesthetics

Construction could take as long as three years. Viewers would see materials, equipment, workers, and the operations of construction during the construction process. Impacts of construction are unavoidable but would be temporary. Motorists would be exposed briefly to construction activities while passing through the construction zone. However, residents of adjacent homes would be exposed to these activities on a more continuous basis.

The proposed project, in combination with other projects listed in Table 28 is not expected to contribute to cumulative construction-related impacts to the visual environment. Consequently, there will be no construction-related cumulative effects to visual resources.

Water Quality

The proposed project may contribute to temporary, construction-related impacts to water quality. Each of the projects included in Table 28 has the potential to result in at least minor construction-related impacts to water quality.

Sediment is the main pollutant of concern during Caltrans construction projects. During construction, there is the potential for increased erosion. Storm water runoff carrying sediments or other pollutants could potentially enter drainages. The potential for increased erosion may persist until completion of construction activities and implementation of landscaping and other long-term erosion control measures.

Accidental spills of petroleum hydrocarbons such as fuels and lubricating oils, concrete wastewater, or other potentially toxic materials are also a concern during construction activities. The magnitude of the impact from an accidental release would depend on the amount and type of material spilled.

The avoidance and minimization measures included in Section 2.15.4 of this document will minimize the project's potential contribution to a cumulative impact. Additionally, each of the projects included in Table 28 will be subject to permit conditions and other regulatory controls to minimize impacts to water quality both during and after construction.

Hazardous Waste

The proposed project is not expected to result in construction-related cumulative effects to the environment due to hazardous waste or materials. It is anticipated that ADL, lead-based paint, asbestos-containing materials, and yellow traffic stripe containing lead and other heavy metals such as chromium may be encountered during construction of the project. Additionally, a number of materials will be used during construction including gasoline, diesel fuel, oil, and lubricants for operation of construction equipment. These materials are typically used, handled, and stored by contractors on all roadway construction projects. No acutely hazardous materials would be used or stored on-site during construction. Construction of the proposed build alternatives could potentially result in small fuel spills from construction or vehicles.

However, as discussed in Section 2.18.4 of this document, the proposed project will implement a number of avoidance and minimization measures to ensure that the project has no environmental effects due to hazardous waste/materials. Other transportation projects would likely have similar measures, and all projects are subject to laws and regulations that govern the handling, storage, and disposal of these materials. Thus, there is little to no potential for cumulative impacts to occur.

Air Quality

During construction, short-term degradation of air quality may occur due to the release of particulate emissions (airborne dust) generated by excavation, grading, hauling, and various other activities. Emissions from construction equipment also are anticipated and would include CO, nitrogen oxides (NOX), volatile organic compounds (VOCs), directly-emitted particulate matter (PM10 and PM2.5), and toxic air contaminants such as diesel exhaust particulate matter. Ozone is a regional pollutant that is derived from NOX and VOCs in the presence of sunlight and heat.

Site preparation and roadway construction could involve clearing, cut-and-fill activities, grading, removing or improving existing roadways, and paving roadway surfaces. Construction-related effects on air quality from most highway projects would be greatest during the site preparation phase because most engine emissions are associated with the excavation, handling, and transport of soils to and from the site. If not properly controlled, these activities would temporarily generate PM10, PM2.5, and small amounts of CO, SO2, NOX, and VOCs. Sources of fugitive dust would include disturbed soils at the construction site and trucks carrying uncovered loads of soils. Unless properly controlled, vehicles leaving the site would deposit mud on local streets, which could be an additional source of airborne dust after it dries. PM10 emissions would vary from day to day, depending on the nature and magnitude of construction activity and local weather conditions. PM10 emissions would depend on soil moisture, silt content of soil, wind speed, and the amount of equipment operating. Larger dust particles would settle near the source, while fine particles would be dispersed over greater distances from the construction site.

Construction-related impacts to air quality are expected to be minimal with the implementation of the avoidance and minimization measures included in Section 2.19.4 of this document and would therefore not substantially contribute a cumulative impact. Each of the transportation projects included in Table 28 would implement similar measures, as applicable, and the development projects included in Table 28 would be

subject to air quality permitting requirements, which include specific mitigation requirements for construction-related impacts to air quality.

Biological Resources

The proposed project will result in temporary impacts to approximately 3.83 acre of Giant Garter Snake habitat. The avoidance and minimization measures described in Section 2.26.10 of this document will minimize potential temporary and construction-related impacts to biological resources. Further, all areas of temporary disturbance will be restored to pre-project conditions; therefore, no adverse effects are anticipated and the project will not contribute to cumulative impacts to the giant garter snake.

Alternative 2—No Build Alternative

The No Build Alternative would not involve construction and therefore would not result in any temporary, construction-related, cumulative impacts.

2.29.3.2 Permanent Cumulative Impacts

Traffic and Transportation

The proposed project would provide greater connectivity and accessibility to the existing and planned HOV lane system in the Sacramento region. The project would conform to Caltrans' effort to encourage the use of public transit and multi-passenger occupied vehicles. Overall, the cumulative impact of this project as well as the development and transportation projects listed in Table 28 would be beneficial to circulation and access in the Sacramento region. There are several projects that would lead to greater connectivity of the road and highway network and increase road capacity. These projects would reduce congestion and decrease travel times for vehicular traffic and emergency services.

The proposed project would construct an essential portion of the regional network of existing and planned high occupancy vehicle lane projects in El Dorado, Placer, and Sacramento counties. Cumulatively, these HOV projects would have a positive effect upon the vehicle occupancy rate. The projects will encourage bus and carpool usage. Traffic studies by Caltrans on other HOV lane projects have shown that vehicle occupancy rates can be raised from the state average of 1.3 occupants per vehicle to as much as 2.8 occupants per vehicle with the implementation of a HOV lane. There are several projects listed in Table 28 that would lead to greater connectivity of the road and highway network and increase road capacity. Many of these projects are expected to reduce congestion and decrease travel times for vehicular traffic and emergency services.

Water Quality

The proposed project is expected to have only minor impacts to water quality. Many, if not most, of the projects included in Table 28 can be expected to have at least minor effects to water quality, although most of these effects cannot be quantified at this time.

The increased volume of storm water runoff from the added impervious surface to the hydrologic sub areas will be negligible and should not have a substantial impact on the overall water quality of the receiving waters. Rather, the implementation of permanent storm water treatment measures as applicable, such as biofiltration strips and/or swales, will slow down the flow of runoff and allow sediments and other pollutants

to settle out and be removed prior to reaching receiving waters. The avoidance and minimization measures included in Section 2.15.4 of this document will minimize the project's potential contribution to a cumulative impact. Additionally, each of the transportation and development projects included in Table 28 will be subject to permit conditions and other regulatory controls to minimize impacts to water quality both during and after construction.

Air Quality

The proposed project is located within the Sacramento Valley Air Basin. Sacramento County is designated by the USEPA as an "non-attainment" area for fine particulate matter; $PM_{2.5}$ and PM_{10} and ozone (O3). The Sacramento urbanized area (including portions of Placer, Sacramento, and Yolo counties) is classified as "moderate maintenance area" for CO.

Regional level conformity in California is concerned with how well the region is meeting the standards set for carbon monoxide (CO), nitrogen dioxide (NO2), ozone (O3), and particulate matter (PM). California is in attainment for the other criteria pollutants. At the regional level, the MTP includes all of the transportation projects planned for a region over a period of years, usually at least 20. Based on the projects included in the MTP, an air quality model is run to determine whether or not the implementation of those projects would conform to emission budgets or other tests showing that attainment requirements of the Clean Air Act are met. If the conformity analysis is successful SACOG and Federal Highway Administration make the determination that the MTP is in conformity with the State Implementation Plan (SIP) for achieving the goals of the Clean Air Act. Otherwise, the projects in the MTP must be modified until conformity is attained. If the design and scope of the proposed transportation project are the same as described in the MTP, then the proposed project is deemed to meet regional conformity requirements for purposes of project-level analysis.

The transportation projects listed in Table 28, including the proposed project, are included in the SACOG MTP and Metropolitan Transportation Improvement Plan (MTIP), both of which conform to the SIP. Before adopting the MTP and MTIP, SACOG performed a quantitative analysis to determine if implementation of the set of projects included in these documents would result in violations of the ozone and PM10 air quality standard. Based on this analysis, SACOG has concluded that the set of projects included in the MTP and MTIP would not result in a violation of the ozone standard and would result in reduction of PM10 emission.

As the SACOG analysis considered all planned and programmed transportation projects included in the MTP and MTIP, the transportation projects listed in Table 28 have been analyzed and found not to contribute to a substantial impact to air quality.

In addition, the development projects in Table 28 are also subject to air quality permitting requirements. Projects that are in conformance with the regional air quality plan and that meet regional air pollutant budgets (based on air quality models and analyses) would not be expected to have a negative cumulative impact.

Noise

Traffic on the freeway is the predominant source of noise in the surrounding landscape. Minor noise sources include traffic from local roads, power tools including lawnmowers and leaf blowers, car alarms, rooftop

heating and cooling equipment, construction tools and activities, and flights from the Sacramento Metropolitan Airport.

Under the Build Alternatives, design year (2040) noise levels are predicted to be between 1 and 2 dBA higher than existing noise levels for all receivers. This 1-2 dBA increase between existing noise levels and predicted noise levels would be barely perceptible to the human ear and would not be substantial. Cumulative noise impacts resulting from the proposed project when combined with other projects are not expected.

Biological Environment

When combined with the projects included in Table 28, the proposed project will result in cumulative impacts to the biological environment, including giant garter snake upland habitat and Swainson's hawk foraging habitat.

Wetlands and Other Waters of the U.S. and California Waters of the State

Because impacts from the proposed project are expected to be minor and the wetlands affected are not of good quality, the proposed project will not likely contribute to a cumulative effect to Wetlands and Other Waters of the U.S. under the jurisdiction of the United States Army Corps of Engineers (USACE), as well as Waters of the State under the jurisdiction of the CDFG.

Special-Status Plant and Animal Species

The proposed project is not expected to result in impacts to special-status plant or animal species and therefore cannot contribute to a cumulative impact.

Threatened and Endangered Species

The proposed project will contribute to a cumulative effect to Swainson's hawk and giant garter snake habitat. The project will permanently impact 1.76 acres of giant garter snake upland habitat. The areas of upland habitat impacted are ruderal grasslands between the Natomas drainage canals and I-5 and I-80. The proposed project may impact approximately 9.85 acres of Swainson's hawk foraging habitat comprised of ruderal grassland habitat in the road shoulders of I-80 and I-5 and small areas of oak savanna habitat within the I-5/I-80 interchange within one mile of a known active nest; all impacts to foraging habitat are within one mile of a recorded nest site.

Alternative 2—No Build Alternative

The No Build Alternative would not involve construction and therefore would not result in any cumulative impacts.

2.29.4 Avoidance, Minimization, and/or Mitigation Measures

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

Chapter 3 California Environmental Quality Act Evaluation

3.1 Determining Significance under the California Environmental Quality Act

The proposed project is a joint project by the Caltrans and the FHWA and is subject to state and federal environmental review requirements. Project documentation, therefore, has been prepared in compliance with both CEQA and NEPA. FHWA's responsibility for environmental review, consultation, and any other action required in accordance with the NEPA and other applicable federal laws for this project is being, or has been, carried out by Caltrans under its assumption of responsibility pursuant to 23 U.S. Code 327. Caltrans is the lead agency under the CEQA and the NEPA.

One of the primary differences between the NEPA and the CEQA is the way significance is determined.

Under the NEPA, significance is used to determine whether an Environmental Impact Statement (EIS), or some lower level of documentation, will be required. NEPA requires that an EIS be prepared when the proposed federal action (project) as a whole has the potential to "significantly affect the quality of the human environment." The determination of significance is based on context and intensity. Some impacts determined to be significant under CEQA may not be of sufficient magnitude to be determined significant under NEPA. Under NEPA, once a decision is made regarding the need for an EIS, it is the magnitude of the impact that is evaluated and no judgment of its individual significance is deemed important for the text. NEPA does not require that a determination of significant impacts be stated in the environmental documents.

CEQA, on the other hand, does require Caltrans to identify each "significant effect on the environment" resulting from the project and ways to mitigate each significant effect. If the project may have a significant effect on any environmental resource, then an EIR must be prepared. Each significant effect on the environment must be disclosed in the EIR and mitigated if feasible. In addition, CEQA Guidelines list a number of mandatory findings of significance, which also require the preparation of an EIR. There are no types of actions under NEPA that parallel the findings of mandatory significance under CEQA. This chapter discusses the effects of this project CEQA significance.

3.2 Discussion of Significant Impacts

3.2.1 Impacts Mitigated to a Less Than Significant Level

Aesthetics – Less than Significant Impact with Mitigation

Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

The removal of vegetation and construction of flyover and retaining walls could have a negative impact on the visual environment, however, with the proposed mitigation; the replanting of disturbed areas and 19 acres of new trees, shrubs and irrigation will be installed between the property line and the new auxiliary lanes, the proposed project will result in "less than significant with mitigation" visual effects. Avoidance, minimization and mitigation measures are summarized in Section 3.6.

Biological Resources – Less than Significant Impact with Mitigation

Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

The proposed project will temporarily impact 3.83 acres and permanently impact 1.76 acres of giant garter snake upland habitat. The project will not impact any giant garter snake aquatic habitat. The areas of upland habitat that the proposed project will impact are ruderal grasslands between the Natomas drainage canals and I-5 and I-80. Avoidance, minimization, and mitigation measures are summarized in Section 2.26.9.

No Swainson's hawk's nests were observed within the ESL though there are two known nest trees within a quarter mile of the ESL. 9.85 acres of foraging habitat is will be permanently impacted by the project.

Avoidance measures include designing the project for the minimum footprint necessary.

Compensatory mitigation for impacts to Swainson's hawk foraging habitat will follow the *Staff Report Regarding Mitigation for Impacts to Swainson's Hawks in the Central Valley of California* (DFG, 1994). As outlined in this document, impacts to foraging habitat shall be mitigated for at a 1:1 ratio for impacts within one mile of an active nest. Impacts are currently estimated at 9.85 acres within one mile of an active nest. Based on these amounts, 9.85 acres of Swainson's hawk foraging habitat mitigation will be needed. More details of Swainson's hawk avoidance, minimization, and mitigation measures are provided in Section 2.26.5.

3.2.1.1 Unavoidable Significant Environmental Effects

The proposed project would not result in any unavoidable significant environmental impacts.

3.3 CEQA Noise Analysis

The Caltrans Noise Protocol states that a traffic noise impact may be considered significant under CEQA if the project is predicted to result in a substantial increase in traffic noise. When determining whether a noise impact is significant under CEQA, the baseline noise level and the build noise level are compared. The CEQA noise analysis is completely independent of the NEPA-23 CFR 772 analysis discussed in Chapter 2, which is centered on noise abatement criteria. Under CEQA, the assessment entails looking at the setting of the noise impact and then how large or perceptible any noise increase would be in the given area. Key considerations include: the uniqueness of the setting, the sensitive nature of the noise receptors, the magnitude of the noise increase, the number of residences affected and the absolute noise level.

The results of the noise modeling assessment indicate that project will result in increase of 1 to 2 dB throughout the study area which is barely perceptible to the human ear. The traffic noise impacts of the proposed project are therefore not considered significant under CEQA.

3.4 CEQA Air Analysis

Local and Regional Implementation of Federal Requirements

The air quality management agencies of direct importance in Sacramento County include the U.S. Environmental Protection Agency (EPA), Air Resources Board (ARB), and the Sacramento Metropolitan Air Quality Management District (SMAQMD). The EPA has established federal standards for which the ARB and SMAQMD have primary implementation responsibility. The ARB and SMAQMD are responsible for ensuring that state standards are met. The SMAQMD is responsible for implementing strategies for air quality improvement and recommending mitigation measures for new growth and development. At the local level, air quality is managed through land use and development planning practices, which are implemented in Sacramento County through the general planning process. The SMAQMD is responsible for establishing and enforcing local air quality rules and regulations that address the requirements of federal and state air quality laws.

The SMAQMD has specified significance thresholds within its *Guide for Air Quality Assessment in Sacramento County* (Sacramento Metropolitan Air Quality Management District 2004) to determine air quality impacts for projects located within the Sacramento Valley Air Basin (SVAB). SMAQMD's thresholds of significance, as indicated in their guide are summarized in Table 29.

Table 29 Sacramento Metropolitan Air Quality Management District Thresholds of Significance

	Ozone Precursor Emissions			
	ROG (pounds per day)	NO_x (pounds per day)	CO	PM_{10}
Construction (short-term)	None	85	CAAQS[a]	CAAQS[a]
Operational (long-term)	65	65	CAAQS[a]	CAAQS[a]

[a] California Ambient Air Quality Standards (CAAQS)

A project that may cause an exceedance of a state air quality standard, or may make a substantial contribution to an existing exceedance of an air quality standard will have a significant adverse air quality impact. "Substantial" is defined as making measurably worse, which is 5% or more of an existing exceedance of a state ambient air quality standard.

Source: Sacramento Metropolitan Air Quality Management District 2004

For the assessment of significant impacts from construction-related emissions of particulate matter, the SMAQMD has established screening levels based on a project's maximum actively disturbed area. Based on the maximum area disturbed, the SMAQMD recommends mitigation measures that would reduce particulate matter emissions to a less-than-significant level. Table 30 summarizes the mitigation measures the SMAQMD recommends for various project sizes.

Table 30 Sacramento Metropolitan Air Quality Management District Particulate Matter Screening Levels for Construction Projects

Screening Level	Mitigation
5 acres and below	No mitigation required
5.1 – 8 acres	Level One Mitigation Required: Water exposed soil twice daily. Maintain 2 feet of freeboard space on haul trucks.
8.1 – 12 acres	Level Two Mitigation Required: Water exposed soil three times daily. Water soil piles three times daily Maintain 2 feet of freeboard space on haul trucks.
12.1 – 15 acres	Level Three Mitigation Required: Keep soil moist at all times. Maintain 2 feet of freeboard space on haul trucks. Use emulsified diesel or diesel catalysts on applicable heavy-duty diesel construction equipment.

Source: Sacramento Metropolitan Air Quality Management District 2004

3.4.1 Project Conformity with Local and Regional Plans

As discussed in Section 2.19 of this document, the proposed project is included in the Metropolitan Transportation Plan (MTP) 2035, which was found to conform and adopted by the Sacramento Area Council of Governments (SACOG) on March 20, 2008. FHWA and the Federal Transit Administration (FTA) adopted the air quality conformity finding on May 16, 2008. The project is also included in the financially constrained 2009/2012 Metropolitan Transportation Improvement Plan (MTIP) (Amendment 7), page 56. The MTIP was found to conform by FHWA and the Federal Transit Administration (FTA) on 08/21/2008. The design concept and scope of the proposed project is consistent with the project description in the MTP 2035, the 2009/2012 MTIP (Amendment 7), and the assumptions in SACOG's regional emissions analysis.

Further, a project level conformity analysis shows that the project will conform with the State Implementation Plan (SIP), including the localized impact analysis for CO and PM10 required by 40 CFR 93.116 and 93.123. This project is not considered a Project of Air Quality Concern regarding particulate matter (PM10) as defined in 40 CFR 93.123 (b)(1) and meets the requirements of the Clean Air Act and 40 CFR 93.116, therefore an explicit PM10 hot-spot analysis is not required (SACOG Regional Planning Partnership, Minutes February 25, 2009).

With regard to short-term construction impacts and SMAQMD's suggested mitigation, Caltrans does not, at this time, have the authority to require the use of specific types of equipment or other direct restrictions on contractor equipment fleet emissions. However, the Contractor is required to comply with Caltrans Standard Specifications Section 14-9.01 and Section 10 of Caltrans Standard Specifications (2006). Section 7, "Legal Relations and Responsibility," addresses the Contractor's responsibility on many items of concern, such as: air pollution; protection of lakes, streams, reservoirs, and other water bodies; use of pesticides; safety; sanitation; convenience of the public; and damage or injury to any person or property as a result of any construction operation. Section 14-9.01 specifically requires compliance by the Contractor with all applicable laws and regulations related to air quality, including air pollution control district and air quality management district regulations and local ordinances. Section 10 requires dust control. If dust palliative materials other than water are to be used, material specifications are contained in Section 2.19.4. Should a SMAQMD permit be required for construction, the Contractor shall be responsible for meeting all permit requirements.

The proposed project's effects to air quality will be less than significant.

Mobile Source Air Toxics (MSAT) Emissions

Mobile source air toxics (MSATs) are compounds emitted from highway vehicles and non-road equipment. Some toxic compounds are present in fuel and are emitted to the air when the fuel evaporates or passes through the engine unburned. Other toxics are emitted from the incomplete combustion of fuels or as secondary combustion products. Metal air toxic also results from engine wear or from impurities in oil or gasoline. The six air toxics labeled by the USEPA as priority transportation MSATs are benzene, formaldehyde, acetaldehyde, diesel particulate matter/diesel exhaust organic gases, acrolein, and 1,3-butadiene. In FHWA's view, information is incomplete or unavailable to credibly predict the project-specific health impacts due to changes in MSAT emissions associated with a proposed set of highway alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action. This EIR/EA includes a basic analysis of the likely MSAT emission impacts of this project. However, available technical tools do not enable us to predict the project-specific health impacts of the emission changes associated with the alternatives in this EIR/EA. Due to these limitations, see Appendix D for a discussion regarding incomplete or unavailable information in accordance with CEQ regulations (40 CFR Section 1502.22[b]).

Table 31 presents Average Annual Daily Traffic (AADT) volumes on I-5 and I-80 for 2006, 2020, 2030, and 2040 conditions. The volumes indicate that the AADT on I-5 and I-80 is currently in excess of 125,000 and is projected to increase in future years.

Table 31 I-5 and I-80 ADT Volumes

	From	To	2006 Daily Traffic Count	Base year Model	No Project Scenario				Plus Project Scenario			
					Unadjusted Forecast	Forecasts			Unadjusted Forecast	Forecasts		
					2035	2040	2030	2020	2035	2040	2030	2020
I-5	South	Garden Highway	188,000	184,438	287,714	337,260	300,780	239,640	291,135	341,670	303,950	241,350
	Garden Highway	W. El Camino	175,000	171,969	256,116	299,340	269,470	217,080	263,133	305,300	272,710	220,590
	W. El Camino	I-80	160,000	148,769	260,117	315,220	276,050	215,680	269,802	321,990	278,850	220,520
	I-80	Arena Boulevard	139,000	127,629	218,642	262,340	229,910	184,510	222,775	261,220	228,030	186,580
	Arena Boulevard	Del Paso Road	127,000	107,557	192,793	239,600	211,740	169,620	195,367	241,610	211,380	170,910
	Del Paso Road	SR 99	103,000	98,425	185,501	210,730	181,830	146,540	186,265	211,830	181,100	146,920
	SR 99	Power Line Road	79,000	77,985	129,789	141,820	124,020	104,910	130,053	142,920	123,480	105,040
	Power Line Road	Airport Road	79,000	77,985	108,394	116,220	105,440	94,210	108,459	115,890	105,350	94,240
	Airport Road	North	53,000	63,779	91,648	86,820	77,030	66,940	91,597	86,460	76,880	66,910
I-80	West	W. El Camino	188,000	74,055	126,743	247,020	235,160	214,350	127,507	252,260	234,960	214,730
	W. El Camino	I-5	175,000	67,173	109,791	222,520	213,470	196,310	111,929	228,940	214, 510	197,380
	I-5	Truxel	160,000	115,900	188,362	249,540	229,600	196,240	194,167	262,480	235,440	199,140
	Truxel	Northgate Boulevard	139,000	111,091	169,941	213,650	194,670	168,430	173,234	219,650	197,890	170,080
	Northgate Boulevard	Norwood Avenue	127,000	123,994	179,629	196,340	177,340	154,820	182,110	200,040	180,050	156,060
	Norwood Avenue	East	103,000	124,629	176,911	167,790	149,940	129,150	179,035	170,950	152,240	130,210

Source: Fehr & Peers 2008a

Table 32 presents modeled MSAT emissions. The differences in emissions between with- and without-project conditions represent emissions generated directly as a result of implementation of the proposed project. To represent a worst-case scenario, traffic along I-5 south of Garden Highway was modeled, as this segment has the highest AADT in the project study area for all conditions. Table 32 indicates that implementation of the proposed project alternatives would result in minor and inconsequential increases in Formaldehyde, Acetalydehyde, DPM, Butadiene, Benzene, and Acrolein emissions under 2020, 2030, and 2040 conditions, which is considered a less than significant impact under CEQA.

Table 32 MSAT Emissions for I-5 south of Garden Highway (grams per day)

	DPM	Δ	Formaldehyde	Δ	Butadiene	Δ
Existing (2006)	466,724.88		228,859.08		41,951.34	
2020 No Project	198,960.84	17.82	97,726.36	8.75	13,049.70	1.17
2020 With Project	198,978.66		97,735.11		13,050.87	

2030 No Project	149,098.99	19.75	79,297.05	10.50	11,159.51	1.47
2030 With Project	149,118.74		79,307.55		11,160.98	
2040 No Project	139,584.64	23.27	75,986.57	12.66	10,944.93	1.73
2040 With Project	139,607.91		75,999.23		10,946.76	
	Benzene	**Δ**	**Acrolein**	**Δ**	**Acetalydehyde**	**Δ**
Existing (2006)	226,976.53		9,412.75		82,020.14	
2020 No Project	85,366.56	7.46	2,870.28	0.26	38,680.50	3.46
2020 With Project	85,374.20		2,870.54		38,683.96	
2030 No Project	70,909.09	9.39	2,412.27	0.32	31,205.57	4.13
2030 With Project	70,918.48		2,412.59		31,209.70	
2040 No Project	67,659.61	11.27	2,397.77	0.40	29,743.80	4.96
2040 With Project	67,670.88		2,398.17		29,748.76	

Generation of Operation-Related Emissions of Ozone Precursors, Carbon Monoxide, and Particulate Matter in Excess of Sacramento Metropolitan Air Quality District Standards (CEQA)

Long-term air quality impacts are those associated with motor vehicles operating on the roadway network, predominantly those operating in the project vicinity. Emission of ROG, NO_x, CO, PM_{10}, $PM_{2.5}$ and CO_2 for existing year (2006), construction year (2020) with and without project, interim year (2030) with and without project and design-year (2040) with and without project conditions were evaluated through modeling conducted using the ARB's CT-EMFAC model and vehicle activity data provided by the project traffic engineer, Fehr & Peers (Fehr & Peers 2008b).

Table 33 summarizes the modeled yearly emissions. The differences in emissions between with- and without-project conditions represent emissions generated directly as a result of implementation of the proposed project. Vehicular emission rates are anticipated to lessen in future years due to continuing improvements in engine technology and the retirement of older, higher-emitting vehicles.

Table 33 Summary of Project-Related Emissions (tons per year)

	Yearly VMT	Δ	ROG	Δ	NO_X	Δ	CO	Δ
Existing (2006)	36,912,756		21,650.50		70,991.57		310,813.23	
2020 No Project	45,560,075	4,079 (0.01%)	10,047.24	0.90	24,740.49	2.22	130,670.60	11.70
2020 With Project	45,564,154		10,048.14		24,742.70		130,682.30	
2030 No Project	51,324,955	6,798 (0.01%)	8,055.97		15,130.45		97,714.87	
2030 With Project	51,331,753		8,057.03		15,132.45		97,727.81	
2040 No Project	57,089,835	9,518 (0.02%)	7,389.22	1.07	12,257.34	2.00	90,098.58	12.94
2040 With Project	57,099,352		7,390.45		12,259.39		90,113.60	
SMAQMD Thresholds		*NA*		*65*		*65*		*None*
	PM10	Δ	**PM2.5**	Δ	CO_2[1]	Δ		
Existing (2006)	1,804.18		1,688.13		13,899.83			
2020 No Project	1,700.10	0.15	1,512.58	0.14	18,036.80	1.61		
2020 With Project	1,700.26		1,512.71		18,038.41			
2030 No Project	1,770.27		1,673.76		20,243.94			
2030 With Project	1,770.51		1,673.98		20,246.62			
2040 No Project	1,860.24	0.23	1,749.61	0.22	22,430.86	2.68		
2040 With Project	1,860.55		1,749.90		22,434.60			
SMAQMD Thresholds		*CAAQS*		*CAAQS*		*None*		

Note: CO^2 presented in metric tons per year.

Project-level emissions were obtained by comparing future with-project emissions to future without-project emissions. Table 33 presents project-level emissions and indicates that project-related emissions are not anticipated to exceed SMAQMD thresholds (See Table 34).

Table 34 SMAQMD Thresholds of Significance

	Ozone Precursor Emissions			
	ROG (pounds per day)	**NO_x (pounds per day)**	**CO**	**PM_{10}**
Construction (short-term)	None	85	CAAQS[a]	CAAQS[a]
Operational (long-term)	65	65	CAAQS[a]	CAAQS[a]

[a] California Ambient Air Quality Standards (CAAQS)

A project that may cause an exceedance of a state air quality standard, or may make a substantial contribution to an existing exceedance of an air quality standard will have a significant adverse air quality impact. "Substantial" is defined as making measurably worse, which is 5% or more of an existing exceedance of a state ambient air quality standard.

Source: Sacramento Metropolitan Air Quality Management District 2004

Temporary Increase in Ozone Precursor (ROG and NOx), CO and PM10 Emissions during Grading and Construction Activities

Implementation of the proposed project would result in the construction of widened roads, overcrossings, and embankments, as well as intersection improvements. Temporary construction emissions would result from grubbing/land clearing, grading/excavation, drainage/utilities/subgrade construction, and paving activities and construction worker commuting patterns. Pollutant emissions would vary daily, depending on the level of activity, specific operations, and prevailing weather.

The SMAQMD Road Construction Emissions Model (Version 6.3) was used to estimate construction-related ozone precursors (ROG and NO_x), CO, PM_{10}, $PM_{2.5}$, and CO_2 emissions from construction activities. It was assumed that construction activities would occur for 8 hours per day over a 24-month period commencing in 2011. The total project length was assumed to be 5 miles, with a total acreage of 15 acres and a maximum of 3.75 acres disturbed per day. It was also assumed that no soil would be imported or exported. Construction activities were divided into separate phases and analyzed separately. The results of modeling for construction activities are summarized in Table 35.

Table 35 Construction Emission Estimates for (pounds per day)

Construction Phase	ROG	NOX	CO	PM10	PM2.5	CO2
Grubbing/land clearing	8.7	46.1	29.8	40.1	10.2	4,311.8
Grading/excavation	10.1	56.3	34.7	40.8	10.9	5,567.7
Drainage/utilities/sub-grade	7.7	39.3	26.2	40.0	10.1	4,083.1
Paving	6.9	27.5	21.7	2.5	2.3	2,697.0
Total	33.4	169.1	112.4	123.4	33.4	16,659.6
SMAQMD Threshold	None	85	None	CAAQS	CAAQS	None

Note: Emissions calculations based on Road Construction Emissions Model (Version 6.3)

Table 35 indicates that construction activities would not exceed SMAQMD threshold levels (Table 29). As previously indicated, the SMAQMD has established screening-level criteria for the assessment of significant impacts from construction-related emissions of fugitive dust. These screening criteria are based on a project's maximum actively disturbed area.

3.5 Climate Change under CEQA

Regulatory Setting

While climate change has been a concern since at least 1988, as evidenced by the establishment of the United Nations and World Meteorological Organization's Intergovernmental Panel on Climate Change (IPCC), the efforts devoted to greenhouse gas (GHG) emissions reduction and climate change research and policy have increased dramatically in recent years. These efforts are primarily concerned with the emissions of GHG 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 2002, with the passage of Assembly Bill 1493 (AB 1493), California launched an innovative and pro-active approach to dealing with GHG emissions and climate change at the state level. Assembly Bill 1493 requires the California Air Resources Board (CARB) to develop and implement regulations to reduce automobile and light truck GHG emissions. These stricter emissions standards were designed to apply to automobiles and light trucks beginning with the 2009-model year; however, in order to enact the standards California needed a waiver from the

U.S. Environmental Protection Agency (EPA). The waiver was denied by EPA in December 2007. See California v. Environmental Protection Agency, 9th Cir. Jul. 25, 2008, No. 08-70011. However, on January 26, 2009, it was announced that EPA will reconsider their decision regarding the denial of California's waiver. On May 18, 2009, President Obama announced the enactment of a 35.5-mpg fuel economy standard for automobiles and light duty trucks which will take effect in 2012. On June 30, 2009 EPA granted California the waiver. California is expected to enforce its standards for 2009 to 2011 and then look to the federal government to implement equivalent standards for 2012 to 2016. The granting of the waiver will also allow California to implement even stronger standards in the future. The state is expected to start developing new standards for the post-2016 model years later this year.

On June 1, 2005, Governor Arnold Schwarzenegger signed Executive Order S-3-05. The goal of this Executive Order is to reduce California's GHG 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 (AB 32), the Global Warming Solutions Act of 2006. AB 32 sets the same overall GHG emissions reduction goals while further mandating that CARB create a plan, which includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." Executive Order S-20-06 further directs state agencies to begin implementing AB 32, including the recommendations made by the state's Climate Action Team.

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

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

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

> **Endangerment Finding:** The Administrator finds that the current and projected concentrations of the six key well-mixed greenhouse gases--carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs),

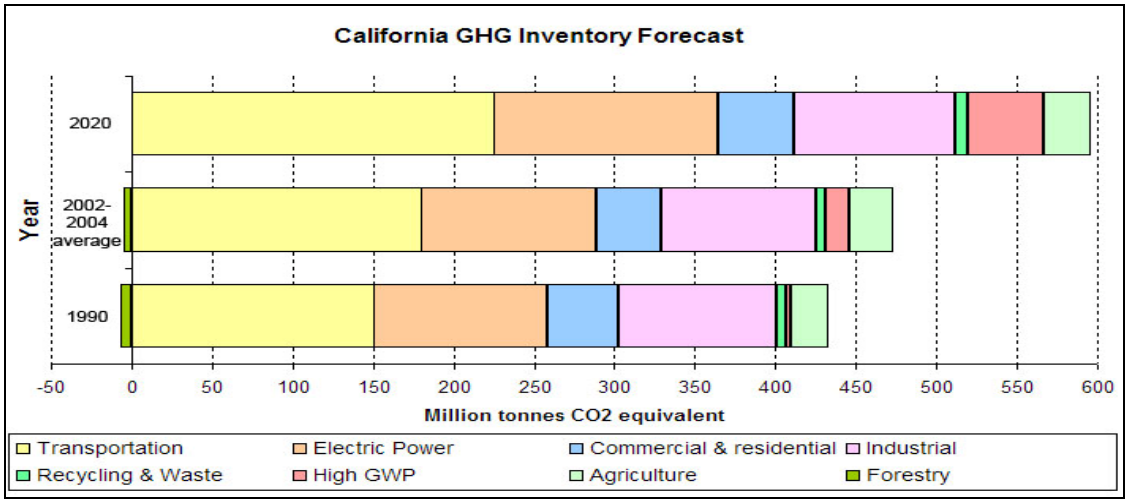
> perfluorocarbons (PFCs), and sulfur hexafluoride (SF6)--in the atmosphere threaten the public health and welfare of current and future generations.
>
> **Cause or Contribute Finding:** The Administrator finds that the combined emissions of these well-mixed greenhouse gases from new motor vehicles and new motor vehicle engines contribute to the greenhouse gas pollution which threatens public health and welfare.

These findings do not themselves impose any requirements on industry or other entities. However, this action is a prerequisite to finalizing the EPA's proposed greenhouse gas emission standards for light-duty vehicles, which were jointly proposed by EPA and the Department of Transportation's National Highway Safety Administration on September 15, 2009.

According to Recommendations by the Association of Environmental Professionals on How to Analyze GHG Emissions and Global Climate change in CEQA Documents (March 5, 2007), an individual project does not generate enough GHG emissions to significantly influence global climate change. Rather, global climate change is a cumulative impact. This means that a project may participate in a potential impact through its incremental contribution combined with the contributions of all other sources of GHG. In assessing cumulative impacts, it must be determined if a project's incremental effect is "cumulatively considerable." See CEQA Guidelines sections 15064(i)(1) and 15130. To make this determination the incremental impacts of the project must be compared with the effects of past, current, and probable future projects. To gather sufficient information on a global scale of all past, current, and future projects in order to make this determination is a difficult if not impossible task.

As part of its supporting documentation for the Draft Scoping Plan, CARB recently released an updated version of the GHG inventory for California (June 26, 2008). Shown below is a graph from that update that shows the total GHG emissions for California for 1990, 2002-2004 average, and 2020 projected if no action is taken.

Figure 16 California Greenhouse Gas Inventory



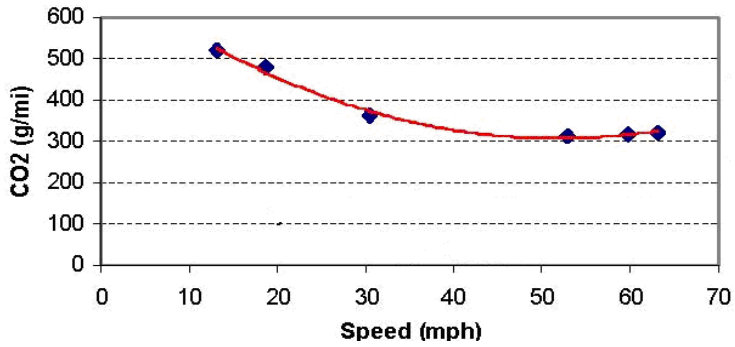
Taken from : http://www.arb.ca.gov/cc/inventory/data/forecast.htm

Caltrans and its parent agency, the Business, Transportation, and Housing Agency, have taken an active role in addressing GHG emission reduction and climate change. Recognizing that 98 percent of California's GHG emissions are from the burning of fossil fuels and 40 percent of all human made GHG emissions are from transportation (see Climate Action Program at Caltrans (December 2006), Caltrans has created and is implementing the Climate Action Program at Caltrans that was published in December 2006. This document can be found at: http://www.dot.ca.gov/docs/ClimateReport.pdf

3.5.1 Project Analysis

One of the main strategies in Caltrans' Climate Action Program to reduce GHG 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 mph; the most severe emissions occur from 0-25 miles per hour (See Figure 17). To the extent that a project relieves congestion by enhancing operations and improving travel times in high congestion travel corridors GHG emissions, particularly CO_2, may be reduced.

Figure 17 Fleet CO_2 Emissions vs. Speed (Highway)



Source: Center for Clean Air Policy— http://www.ccap.org/Presentations/Winkelman%20TRB%202004%20(1-13-04).pdf

Increase in Greenhouse Gas (GHG) Contaminant Emissions

Impacts associated with GHGs are long-term climatic changes. As previously noted, GHG contaminant emissions tend to accumulate in the atmosphere because of their relatively long lifespan. As a result, their impact on the atmosphere is mostly independent of the point of emission; GHG contaminant emissions are more appropriately evaluated on a regional, state, or even national scale than on an individual project level. It is anticipated that GHG emissions would increase with implementation of the proposed project alternatives.

The purpose of this project is to reduce traffic delays by improving the interchange operation and safety, improve air-quality, increase capacity and promote ride-sharing. Traffic on both I-5 and I-80 has steadily increased over the last few decades with commercial and residential development along the I-5 and I-80 corridors reducing operating efficiency of the existing interchange. The project area has been incorporated for larger studies in the Sacramento Transportation Authority (STA) Freeway Safety and Congestion Relief Program as well as part of the larger existing and planned HOV network in the Sacramento region supporting van pools, carpools, and transit. As part of the regional transportation plans, including the 2009/2012 Metropolitan Transportation Implementation Plan (MTIP), the Metropolitan Transportation Plan (MTP) 2035, Measure A funding, and the Sacramento Regional Blueprint, this project is also identified in the current SACOG MTIP as a part of the area's overall strategy for providing mobility, congestion relief, and reduction of transportation-related air pollution in support of efforts to attain federal air quality standards for the region.

This project supports the goals of the SACOG 2035 Metropolitan Transportation Plan by providing greater connectivity with the existing and proposed HOV network in the Sacramento region. Additionally, the vision is to provide congestion relief by carrying more people in fewer vehicles during peak periods and promote ride sharing and the use of high occupancy vehicles, such as carpools, vanpools, and express bus services. The proposed project will construct an HOV flyover and connect future HOV lanes to provide continuity of HOV lanes in the vicinity of the project. As such, this project is a transportation demand project by definition.

The existing I-5/I-80 interchange is a freeway-to freeway interchange constructed in 1968. Within the project limits, I-5 is an eight-lane divided freeway with auxiliary lanes to and from the adjacent interchanges. I-80 is a six-lane divided freeway within the project limits. A portion of the eastbound I-80 mainline between I-5 and the San Juan Road Overcrossing is reduced to two lanes. The portion of I-80 east of the interchange has auxiliary lanes to and from the Truxel Road interchange. Under existing conditions , recurrent congestion is experienced during morning and evening peak periods on I-5 (in both directions), as well as eastbound I-80, near the interchange from lack of capacity and short weaving distances between the on and off-ramps and the connector ramps. The bike path on San Juan Road, beginning at Azevedo Road

and ending at Airport Boulevard will be perpetuated. The city of Sacramento is proposing to extend the bicycle lane to West El Camino Avenue.

Section 1.3.2, Operational Deficiencies, details the operational and accessibility constraints and Section 2.10, Traffic Capacity and Congestion, describes the worsening weaving, delays and interruptions in traffic flow to which commuters would be subject in 2040 without the proposed operational improvements. Continued development along the I-5 and I-80 corridors and increasing traffic volumes will further exacerbate the eroding operating conditions which commuters would be subject to without this project in 2040. The American River Bridge bottleneck generates congestion that extends to SR 99 on southbound I-5 under all alternatives. There is a proposal included in the MTP to provide an all modal river crossing near Truxel, which could relieve some of the congestion on I-5 at the American River Bridge.

For 2040 conditions, congestion would be relieved with improved traffic flows, greater speeds, improved travel times reductions, and less congestion delay (See Table 36). The improved performance was a result of adding HOV direct connectors and replacing the existing loop connector in the southeast quadrant with a multilane flyover connector. Elimination of the existing connector would permit more efficient weave/merge movements and improve safety onto eastbound I-80 under the I-5 OC. The build alternative improvements are expected to reduce sideswipe, hit object, and overturn accidents for interchange loop ramps.

Table 36 Vehicle miles/hours travelled

Scenario	Daily Vehicle Miles Traveled	Daily Vehicle Hours Traveled	Daily Average Speed (miles per hour)
Existing conditions	36,912,756	1,013,096	41.74
2020 no project	45,560,075	1,355,023	39.9
2020 with project	45,564,154	1,355,836	39.9
2020 with project – 2020 no project	4,079 (0.01%)	813 (0.06%)	0.0 (0%)
2030 no project	51,324,955	1,582,974	38.7
2030 with project	51,331,753	1,584,329	38.7
2030 with project – 2030 no project	6,798 (0.01%)	1,355 (0.09%)	0.0 (0%)
2040 no project	57,089,835	1,810,925	37.4
2040 with project	57,099,352	1,812,822	37.5
2040 with project – 2040 no project	9,518 (0.02%)	1,897 (0.10%)	0.1 (0.3%)

Source: Fehr & Peers 2008b

Quantitative Analysis

The quantification of CO_2 emissions was conducted using the Air Resources Boards' CT-EMFAC model and vehicle activity data provided by the project traffic engineer, Fehr & Peers

(Fehr & Peers 2008b). Yearly emissions of CO_2 associated with and without implementation of the proposed project alternatives are presented in Table 37.

Increases of CO_2 emissions over existing conditions are predicted by the modeling. Table 37 indicates that implementation of the proposed project when compared to the no project condition would result in increased CO_2 emissions of 1.61 metric tons per year 2020 conditions, 2.68 metric tons per year for 2030 conditions, and 3.74 metric tons per year for 2040 conditions. This is equivalent to an increase of less than 1 passenger cars/day, assuming the average U.S. passenger vehicle emits approximately 5.20 metric tons CO^2e (U.S. Environmental Protection Agency 2005, http://www.epa.gov/otaq/climate/420f05004.htm).

The 2006 existing condition CO_2 emissions were about 13,900 metric tons per year. In 2020, the CO_2 emissions are anticipated to be approximately 18,037 metric tons per year without the project and 18,038 metric tons per year with the project. While the modeling does show an increase in CO_2 emissions over existing conditions, it is important to note that even in the "no build" condition, CO_2 emission increases are anticipated. In fact, as the modeling results show, the majority of the CO_2 emission increases are not caused by the project since the difference between the "with project" and "without project" CO_2 emissions ranges from only about 1.6 metric tons per year to 3.74 metric tons per year. Even without the project, the 2040 "no build" condition has a modeled increase of 8.5 metric tons per year, which is a 61.3% increase over the existing conditions. This indicates that a substantial portion of the CO_2 emission increase stems from factors outside of the project, such as constrained traffic movements outside the project area, land use changes, and population growth.

Table 37 Summary of Project-Related Emissions (pounds per day)

	Yearly VMT	Δ		CO2[1]	Δ
Existing (2006)	36,912,756	-		13,899.83	-
2020 No Project	45,560,075	4,079 (0.01%)		18,036.80	1.61
2020 With Project	45,564,154			18,038.41	
2030 No Project	51,324,955	6,798 (0.01%)		20,243.94	2.68
2030 With Project	51,331,753			20,246.62	
2040 No Project	57,089,835	9,518 (0.02%)		22,430.86	3.74
2040 With Project	57,099,352			22,434.60	
SMAQMD Thresholds	-	*NA*		-	*None*

[1] CO_2 presented in metric tons per year.

Limitations and Uncertainties with Modeling

EMFAC

Although EMFAC can calculate CO_2 emissions from mobile sources, the model does have limitations when it comes to accurately reflecting CO_2 emissions. According to the *National Cooperative Highway Research Program* report, Development of a Comprehensive Modal

Emission Model (April 2008), studies have revealed that brief but rapid accelerations can contribute significantly to a vehicle's carbon monoxide and hydrocarbon emissions during a typical urban trip. Current emission-factor models are insensitive to the distribution of such modal events (i.e., cruise, acceleration, deceleration, and idle) in the operation of a vehicle and instead estimate emissions by average trip speed. This limitation creates an uncertainty in the model's results when compared to the estimated emissions of the various alternatives with baseline in an attempt to determine impacts. Although work by EPA and the CARB is underway on modal-emission models, neither agency has yet approved a modal emissions model that can be used to conduct this more accurate modeling. In addition, EMFAC does not include speed corrections for most vehicle classes for CO_2 – for most vehicle classes emission factors are held constant which means that EMFAC is not sensitive to the decreased emissions associated with improved traffic flows for most vehicle classes. Therefore, unless a project involves a large number of heavy-duty vehicles, the difference in modeled CO_2 emissions due to speed change will be slight.

It is interesting to note that CARB is currently not using EMFAC to create its inventory of greenhouse gas emissions. It is unclear why the CARB has made this decision. Their website only states:

> REVISION: Both the EMFAC and OFFROAD Models develop CO2 and CH4 [methane] emission estimates; however, they are not currently used as the basis for [CARB's] official [greenhouse gas] inventory which is based on fuel usage information. http://www.arb.ca.gov/cc/inventory/inventory.htm. However, ARB is working towards reconciling the emission estimates from the fuel usage approach and the models.

Other Variables

With the current science, project-level analysis of greenhouse gas emissions is limited. Although a greenhouse gas analysis is included for this project, there are numerous key greenhouse gas variables that are likely to change dramatically during the design life of the proposed project and would thus dramatically change the projected CO_2 emissions.

First, vehicle fuel economy is increasing. The EPA's annual report, "Light-Duty Automotive Technology and Fuel Economy Trends: 1975 through 2008 (http://www.epa.gov/oms/fetrends.htm)," which provides data on the fuel economy and technology characteristics of new light-duty vehicles including cars, minivans, sport utility vehicles, and pickup trucks, confirms that average fuel economy has improved each year beginning in 2005, and is now the highest since 1993. Most of the increase since 2004 is due to higher fuel economy for light trucks, following a long-term trend of slightly declining overall fuel economy that peaked in 1987. These vehicles also have a slightly lower market share, peaking at 52 percent in 2004 with projections at 48 percent in 2008. Table 38 shows the alternatives for vehicle fuel economy increases currently being studied by the National Highway

Traffic Safety Administration in its Draft EIS for New Corporate Average Fuel Economy (CAFE) Standards (June 2008).

Table 38 Vehicle Fuel Economy

Model Year 2015 Required Miles Per Gallon (mpg) by Alternative							
No Action		25% Below Optimized	Optimized (Preferred)	25% Above Optimized	50% Above Optimized	Total Costs Equal Total Benefits	Technology Exhaustion
Cars	27.5	33.9	35.7	37.5	39.5	43.3	52.6
Trucks	23.5	27.5	28.6	29.8	30.9	33.1	34.7

Second, near zero carbon vehicles will come into the market during the design life of this project. According to a March 2008 report released by University of California Davis (UC Davis), Institute of Transportation Studies:

> Large advancements have occurred in fuel cell vehicle and hydrogen infrastructure technology over the past 15 years. Fuel cell technology has progressed substantially resulting in power density, efficiency, range, cost, and durability all improving each year. In another sign of progress, automotive developers are now demonstrating over 100 fuel cell vehicles (FCVs) in California – several in the hands of the general public – with configurations designed to be attractive to buyers. Cold-weather operation and vehicle range challenges are close to being solved, although vehicle cost and durability improvements are required before a commercial vehicle can be successful without incentives. The pace of development is on track to approach pre-commercialization within the next decade.
>
> A number of the U.S. DOE 2010 milestones for FCV development and commercialization are expected to be met by 2010. Accounting for a five to six year production development cycle, the scenarios developed by the U.S. DOE suggest that 10,000s of vehicles per year from 2015 to 2017 would be possible in a federal demonstration program, assuming large cost share grants by the government and industry are available to reduce the cost of production vehicles.[3]

Third, as previously stated, California has recently adopted a low-carbon transportation fuel standard. CARB is scheduled to come out with draft regulations for low carbon fuels in late 2008 with implementation of the standard to begin in 2010.

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,"

[3] Cunningham, Joshua, Sig Cronich, Michael A. Nicholas. March 2008. Why Hydrogen and Fuel Cells are Needed to Support California Climate Policy, UC Davis, Institute of Transportation Studies, pp. 9-10.

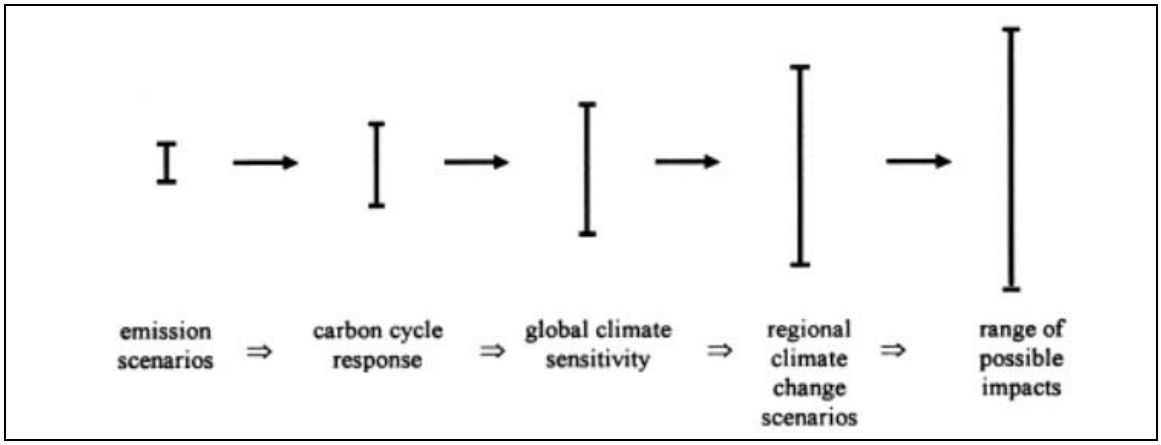
(http://www.cbo.gov/ftpdocs/88xx/doc8893/01-14-GasolinePrices.pdf) the Congressional Budget Office found the following results based on data collected from California: 1) freeway motorists have adjusted to higher gas prices by making fewer trips and driving more slowly; 2) the market share of sports utility vehicles is declining; and 3) the average prices for larger, less-fuel-efficient models have declined over the past five years as average prices for the most-fuel-efficient automobiles have risen, showing an increase in demand for the more fuel efficient vehicles.

Limitations and Uncertainties with Impact Assessment

Taken from pp. 3-48 and 3-49 of the National Highway Traffic Safety Administration Draft EIS for New CAFE Standards (June 2008), Figure 18 illustrates how the range of uncertainties in assessing greenhouse gas impacts grows with each step of the analysis:

> Cascade of uncertainties typical in impact assessments showing the "uncertainty explosion" as these ranges are multiplied to encompass a comprehensive range of future consequences, including physical, economic, social, and political impacts and policy responses.

Figure 18 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 for this project of what the modeled 2020 Build scenario of 1.61 to the 2040 Build scenario of 3.64 ton increase in CO_2 emissions would mean for climate change given the overall California greenhouse gas emissions inventory of approximately 430 million tons of $C0_2$ equivalent. This uncertainty only increases when viewed globally. The IPCC has created multiple scenarios to project potential future global greenhouse gas emissions as well as to evaluate potential changes in global temperature, other climate changes, and their effect on human and natural systems. These scenarios vary in terms of the type of economic development, the amount of overall growth, and the steps taken to reduce greenhouse gas

emissions. Non-mitigation IPCC scenarios project an increase in global greenhouse gas emissions by 9.7 up to 36.7 billion metric tons CO_2 from 2000 to 2030, which represents an increase of between 25 and 90%.[4]

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.

Although some of the emission increases might be new, the extent to which the modeled 1.64 to 3.64 ton increase in CO_2 emissions represents a net global increase, reduction, or no change, is uncertain and there are no models approved by regulatory agencies that operate at the global or even statewide scale.

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

> In analyzing across the CAFE 30 alternatives, the mean change in the global mean surface temperature, as a ratio of the increase in warming between the B1 (low) to A1B (medium) scenarios, ranges from 0.5 percent to 1.1 percent. The resulting change in sea level rise (compared to the No Action Alternative) ranges, across the alternatives, from 0.04 centimeter to 0.07 centimeter. In summary, the impacts of the model year 2011-2015 CAFE alternatives on global mean surface temperature, sea level rise, and precipitation are relatively small in the context of the expected changes associated with the emission trajectories. This is due primarily to the global and multi-sectoral nature of the climate problem. Emissions of CO_2, the primary gas driving the climate effects, from the United States automobile and light truck fleet represented about 2.5 percent of total global emissions of all greenhouse gases in the year 2000 (EPA, 2008; CAIT, 2008). While a significant source, this is a still small percentage of global emissions, and the relative contribution of CO_2 emissions from the United States light vehicle fleet is expected to decline in the future, due primarily to rapid growth of emissions from developing economies (which are due in part to growth in global transportation sector emissions). [NHTSA Draft EIS for New CAFE Standards, June 2008, pp.3-77 to 3-78].

[4] 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.

3.5.2 CEQA Conclusion

While the project is anticipated to result in a slight increase in CO_2 emissions, the increase is very small. In addition, the majority of the CO_2 emissions increases are caused not by the project itself but by other factors such as population growth and land use. This project is also an integral part of an overall transportation strategy to support transit and reduce congestion. Based on the limitations outlined above, it is Caltrans determination that in the absence of further regulatory or scientific information related to greenhouse gas emissions and CEQA significance, it is too speculative to make a determination regarding 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.

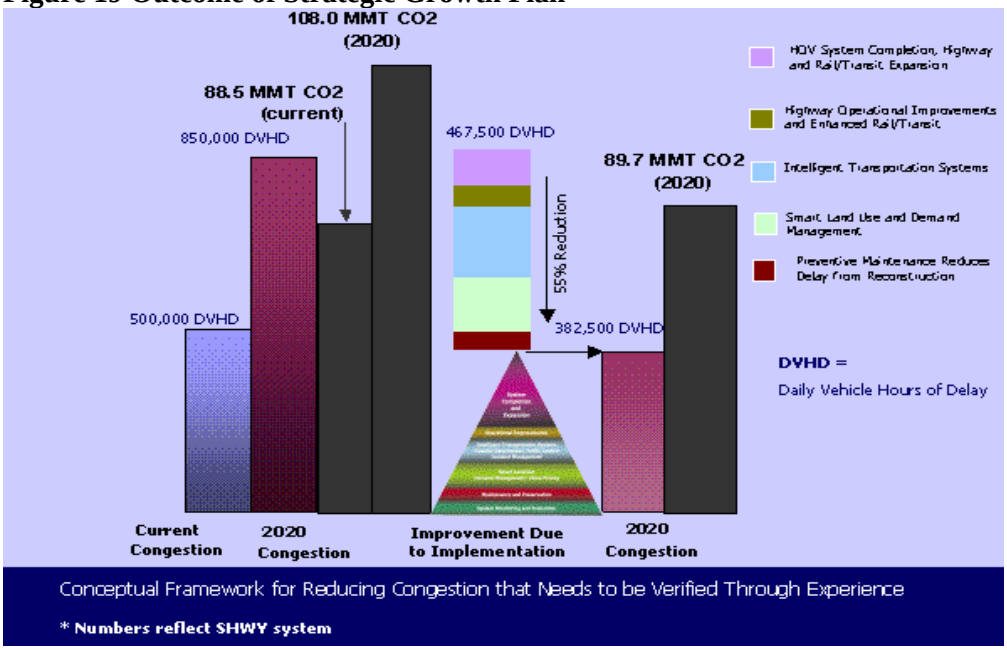
3.5.3 Construction GHG Emissions

GHG emissions for transportation projects can be divided into those produced during construction and those produced during operations. Construction GHG emissions include emissions produced as a result of material processing, emissions produced by onsite construction equipment, and emissions arising from traffic delays due to construction. These emissions will be produced at different levels throughout the construction phase; their frequency and occurrence can be reduced through innovations in plans and specifications and by implementing better traffic management during construction phases. In addition, with innovations such as longer pavement lives, improved traffic management plans, and changes in materials, the GHG emissions produced during construction can be mitigated to some degree by longer intervals between maintenance and rehabilitation events. Measures to reduce construction related emissions from this project are discussed in Section 2.19.4

3.5.4 Assembly Bill 32 Compliance (AB 32)

Caltrans continues to be actively involved on the Governor's Climate Action Team as CARB works to implement the Governor's Executive Orders and help achieve the targets set forth in AB 32. Many of the strategies Caltrans is using to help meet the targets in AB 32 come from the California Strategic Growth Plan, which is updated each year. Governor Arnold Schwarzenegger's Strategic Growth Plan calls for a $238.6 billion infrastructure improvement program to fortify the state's transportation system, education, housing, and waterways, including $100.7 billion in transportation funding through 2016. As shown on the figure below, the Strategic Growth Plan targets a significant decrease in traffic congestion below today's level and a corresponding reduction in GHG emissions. The Strategic Growth Plan proposes to do this while accommodating growth in population and the economy. A suite of investment options has been created that combined together yield the promised reduction in congestion. The Strategic Growth Plan relies on a complete systems approach of a variety of strategies: system monitoring and evaluation, maintenance and preservation, smart land use and demand management, and operational improvements.

Figure 19 Outcome of Strategic Growth Plan



As part of the 2006Climate Action Program at Caltrans, http://www.dot.ca.gov/docs/ClimateReport.pdf), 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 is working closely with local jurisdictions on planning activities; however, Caltrans does not have local land use planning authority. Caltrans is also supporting efforts to improve the energy efficiency of the transportation sector by increasing vehicle fuel economy in new cars, light and heavy-duty trucks; Caltrans is doing this by supporting on-going research efforts at universities, by supporting legislative efforts to increase fuel economy, and by its participation on the Climate Action Team. It is important to note, however, that the control of the fuel economy standards is held by EPA and CARB. Lastly, the use of alternative fuels is also being considered; Caltrans is participating in funding for alternative fuel research at the UC Davis.

Table 39 summarizes Caltrans' and statewide efforts that Caltrans is implementing in order to reduce GHG emissions. For more detailed information about each strategy, please see Climate Action Program at Caltrans (December 2006); it is available at http://www.dot.ca.gov/docs/ClimateReport.pdf.

Table 39 Climate Change 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 & GHG 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, CalEPA, CARB, CEC		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 .36	3.6
Goods Movement	Office of Goods Movement	Cal EPA, CARB, BT&H, MPOs		Goods Movement Action Plan	Not Estimated	Not Estimated
Total					2.72	18.67

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

Caltrans and the California Highway Patrol are working with regional agencies to implement intelligent transportation systems (ITS) to help manage the efficiency of the existing highway system. ITS is commonly referred to as electronics, communications, or information processing used singly or in combination to improve the efficiency or safety of a surface transportation system.

In addition, Caltrans provides ridesharing services and park-and-ride facilities to help manage the growth in demand for highway capacity.

According to Caltrans Standard Specification Provisions, idling time for lane closure during construction is restricted to ten minutes in each direction; in addition, the contractor must comply with Sacramento Metropolitan Air Quality Control District's rules, ordinances, and regulations in regards to air quality restrictions.

3.5.5 Adaptation Strategies

Addressing climate change requires a two-pronged approach: mitigation and adaptation. The previous discussion addressed the primary cause of climate change, greenhouse gas (GHG), and the state's efforts to reduce these emissions. It covered the executive orders and legislation, strategies to reduce and mitigate the effects of these emissions, and analytical methods to analyze GHG for environmental documents.

Now, we'll turn to climate change "adaptation strategies" by which we mean 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; increased storm damage from flooding and erosion; and inundation from rising sea levels. These effects will vary by location and in extreme cases may require that a facility be relocated or redesigned. There may also be economic and strategic ramifications as a result of these types of impacts to the transportation infrastructure.

Climate change adaption must also involve the natural environment as well. Efforts are underway to develop strategies to cope with impacts to habitat and biodiversity through planning and conservation.

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

Climate change adaption 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, Governor Schwarzenegger signed Executive Order S-13-08 which directed a number of state agencies to address California's vulnerability to sea level rise caused by climate change.

The California Resources Agency (now the Natural Resources Agency, [Resources Agency]), through the interagency Climate Action Team, was directed to coordinate with local, regional, state and federal, and public and private entities to develop a state Climate Adaptation Strategy. The Climate Adaptation Strategy will summarize the best known science on climate change impacts to California, assess California's vulnerability to the identified impacts and then outline solutions that can be implemented within and across state agencies to promote resiliency.

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

- Relative sea level rise projections for California, taking into account coastal erosion rates, tidal impacts, El Niño and La Niña events, storm surge and land subsidence rates;
- 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.

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

Prior to the release of the final Sea Level Rise Assessment Report, all state agencies that are planning to construct projects in areas vulnerable to future sea level rise were directed to consider a range of sea level rise scenarios for the years 2050 and 2100 in order to assess project vulnerability and, to the extent feasible, reduce expected risks and increase resiliency to sea level rise. However, all projects that have filed a Notice of Preparation, and/or are programmed for construction funding the next five years (through 2013), or are routine maintenance projects as of the date of Executive Order S-13-08 may, but are not required to, consider these planning guidelines. The Notice of Preparation for this project was issued on February 20, 2008 and filed with the Governor's Office of Planning and Research. Sea level rise estimates should also be used in conjunction with information regarding local uplift and subsidence, coastal erosion rates, predicted higher high water levels, storm surge and storm wave data. (Executive Order S-13-08 allows some exceptions to this planning requirement.)

Climate change adaptation for transportation infrastructure involves long-term planning and risk management to address vulnerabilities in the transportation system from increased precipitation and flooding; the increased frequency and intensity of storms and wildfires; rising temperatures; and rising sea levels. Caltrans is an active participant in the efforts being conducted as part of Governor's Schwarzenegger's Executive Order on Sea Level Rise and is mobilizing to be able to respond to the National Academy of Science report on Sea Level Rise Assessment which is due to be released by December 2010. Currently, Caltrans is working to assess which transportation facilities are at greatest risk from climate change effects. However, without statewide planning scenarios for relative sea level rise and other climate change impacts, Caltrans has not been able to determine what change, if any, may be made to its design standards for its transportation facilities. Once statewide planning scenarios become available, Caltrans will be able review its current design standards to determine what changes, if any, may be warranted in order to protect the transportation system from sea level rise. For additional information regarding the potential impacts of climate change in California, see Our Changing Climate: Assessing the Risks to California, A Summary Report from the California Climate Change Center at http://www.energy.ca.gov/2006publications/CEC-500-2006-077/CEC-500-2006-077.PDF.

3.6 Mitigation Measures for Significant Impacts under CEQA

All impacts stemming from the proposed project will be mitigated to less than significant. Below is a summary of mitigation proposed under CEQA.

3.6.1 Giant Garter Snake

The proposed project will temporarily impact 3.83 acres and permanently impact 1.76 acres of giant garter snake upland habitat. The project will not impact any giant garter snake aquatic habitat. The areas of upland habitat that the proposed project will impact are ruderal grasslands between the Natomas drainage canals and I-5 and I-80. More details of avoidance, minimization, and mitigation measures can be found in Section 2.26.9. GGS habitat will be avoided by establishing ESA fencing to prevent disturbance beyond what's necessary for construction.

Other avoidance measures include construction windows, minimizing disturbed areas, and pre-construction surveys.

After construction is completed temporary fill and construction debris will be removed and, wherever feasible, disturbed areas will be restored to pre-project conditions. Table 40 summarizes the conservation measures that will be taken.

Table 40 Summary of Giant Garter Snake Conservation Measures

EFFECTS:	EFFECTS:	CONSERVATION MEASURE:
Temporary (1 season)	Temporary impacts will not exceed 20 acres and no permanent impacts.	Habitat Restoration
Temporary (2 seasons)	Temporary impacts will not exceed 20 acres and no permanent impacts.	Habitat Restoration plus 1:1 replacement
Temporary (More than 2 seasons)	Temporary impacts will not exceed 20 acres and no permanent impacts.	3:1 Replacement (or restoration plus 2:1 replacement)
Permanent loss	The project will not exceed three acres of giant garter snake habitat and will impact less than one acre of aquatic habitat.	3:1 Replacement

Compensatory mitigation shall be determined according to the "Standard Avoidance and Minimization Measures During Construction Activities in Giant Garter Snake *(Thamnophis gigas)* Habitat" (USFWS 2005a) as outlined in Table 27.

Temporary impacts are expected to last for one season and the disturbed area will be revegetated following the measures outlined above.

Permanent impacts will be compensated for at a 3:1 ratio. A total of 5.28 acres of giant garter snake upland habitat mitigation will be required to fully compensate for project impacts. All mitigation will be completed within the Sacramento River watershed and will be approved by USFWS.

Cumulative impacts for the GGS are not considered significant because the proposed mitigation already renders the impacts "less than cumulative considerable."

3.6.2 Swainson's Hawk

More details of Swainson's hawk avoidance, minimization, and mitigation measures are provided in Section 2.26.5. No Swainson's hawk's nests were observed within the ESL though there are two known nest trees within a quarter mile of the ESL. 9.85 acres of foraging habitat is will be permanently impacted by the project.

Avoidance measures include designing the project for the minimum footprint necessary.

Compensatory mitigation for impacts to Swainson's hawk foraging habitat will follow the *Staff Report Regarding Mitigation for Impacts to Swainson's Hawks in the Central Valley of California* (DFG, 1994). As outlined in this document, impacts to foraging habitat shall be mitigated for at a 1:1 ratio for impacts within one mile of an active nest. Impacts are currently estimated at 9.85 acres within one mile of an active nest. Based on these amounts, 9.85 acres of Swainson's hawk foraging habitat mitigation will be needed.

Cumulative impacts for the Swainson's hawk are not considered significant because the proposed mitigation already renders the impacts "less than cumulative considerable."

3.6.3 Visual Impacts

Nineteen acres of new trees, shrubs and irrigation systems will be installed between the property line and the new auxiliary lanes as compensation for the loss of vegetation and highway planting.

Chapter 4 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 and scoping meetings. This chapter summarizes the results of Caltrans' efforts to fully identify, address, and resolve project-related issues through early and continuing coordination.

4.1 Responsible Agencies Under CEQA

Because of their jurisdiction by law, the following state agencies or officers will issue permits or approval for the project:

- California Department of Fish and Game (CDFG).
- Central Valley Regional Water Quality Control Board (CVRWQCB).

4.2 Trustee Agencies under CEQA

The California Department of Parks and Recreation (DPR) and CDFG are also considered Trustee Agencies (CEQA Guidelines Section 15386) because both departments have jurisdiction by law over resources that could be affected by the project that are held in trust for the people of the State of California.

4.3 Other Jurisdictional Agencies

Although not Responsible or Trustee agencies under CEQA, the following federal agencies are considered jurisdictional agencies because they will issue permits or approvals for the project:

- U.S. Army Corps of Engineers (USACE).
- U.S. Environmental Protection Agency (USEPA).
- United States Fish and Wildlife Service (USFWS).

4.4 Notice of Preparation

A Notice of Preparation (NOP) was sent to the State Clearinghouse on February 20, 2008. A public notice of the availability of the Notice of Preparation was published in the Sacramento Bee on March 10, 2008. The NOP was also distributed directly to approximately 51 local,

state, and federal agencies and elected officials; tribal representatives; neighborhood and community groups; and other organizations. The NOP contained information regarding the planned open house/scoping meetings.

The following agencies responded in writing to the NOP. Their letters are included in Appendix I.

Table 41 Comments Received on the Notice of Preparation

Agency	Date	Issues/Concerns
California Department of Water Resources, Floodplain Protection Section	March 24,2008	Noted that project may be an encroachment on the State Adopted Plan of Flood Control and provided information on process for obtaining an encroachment permit.
Sacramento Fire Department	March 24, 2008	Provide the Fire Department with advance notice of possible street impacts

4.5 Public Outreach

One Open House/Scoping Meeting was held following the publication of the NOP on March 13, 2008 at the Caltrans District 3 Office located at 2800 Gateway Oaks Drive in Sacramento, CA. The purpose of the open house/scoping meeting was to inform the public, local officials, and all interested parties of the current status of the project. The format of the public open house was informal, and this format was chosen to facilitate communications between the public and Caltrans. Maps, exhibits, and graphic displays were set up around the room, with Caltrans representatives available to answer questions. Attendees were encouraged to submit written comments on cards that were provided for this purpose. Approximately 50 people attended the open house, with 16 people providing comments. The comments were generally in favor of the project. Below is a table summarizing the comments.

Table 42 Summary of Comments on Notice of Preparation and Scoping Meeting

Supports project.
Supports Alternative 1C, suggests improving pedestrian safety at West El Camino and I-5 and Del Paso and I-5.
Concern about commute during construction.
Would like to see through traffic diverted from downtown.
Operational suggestion regarding the I-5/Garden Hwy on-ramp.
Would like to see visual simulations of the HOV connectors.
Supportive of project.
Would like to see a bike overcrossing over I-80, west of I-5 during construction.
Supportive of carpool/bus lanes.
Would like to see the website.
Would like to see the website.
Suggests expanding the on-off-ramps at I-80 and West El Camino.
Would like to improve the sound barrier.
Would like to have more information on the project.
Questions about project scope.
Concern about the visual impacts and glare from freeway lighting.

Caltrans also conducted an informal meeting with the Natomas Community Association on July 22, 2009. The concerns voiced at this meeting were largely focused on noise generated by traffic on new structures; the lane reduction at Northgate Boulevard, and protection for pedestrians and bicyclists on the San Juan Road Bridge.

Chapter 5 List of Preparers

Maria Alicia Beyer Salinas, Transportation Engineer (Hazardous Waste Coordinator). B.S. Civil Engineering, Chihuahua State University, Mexico. M.S. Civil Engineering, University of Texas at El Paso. 12 years of experience in urban development and construction; 15 years of experience in hazardous waste studies. Initial Site Assessment.

Jim Calkins, PE; Senior Transportation Engineer, BSCE Civil Engineering, University of Colorado; BS Recreation/Resource Management, Northern Arizona University; 20 years experience in Transportation Engineering.

Kim Christmann, Paleontological report oversight. BA Geology, Rutgers University, New Jersey, Graduate studies in paleontology, UC Davis; 15 years experience in paleontology.

Rajive Chadha, Environmental Engineer, B.A.Sc. Civil Engineering, University of Ottawa, 15 years of experience performing hazardous waste studies/investigations. Initial Site Investigation.

Virginia Denison, Senior Environmental Planner. BS Environmental Resource Management, California State University, Sacramento. 2 years experience NEPA reviewer; 17 years experience performing environmental studies, preparing and reviewing environmental documents. Nepa Review

Joan Fine, Associate Environmental Planner (Architectural History). B.A. Environmental Studies, University of California at Santa Barbara; M.A. History, California State University at Sacramento. PQS: Principal Architectural Historian. 9 years of experience with Caltrans. Historic Resource Evaluation Report.

Lupe Valdez Jimenez- Senior Environmental Planner, B.A. Environmental Studies, California State University Sacramento; 19 years experience in preparing and reviewing environmental documents/permits.

Rebecca Loeffler, Environmental Planner (Natural Sciences). B.S. Biological Sciences, University of California, Davis. 5 years experience in biological and environmental resource analysis. Natural Environment Study.

Judy McCullough, Hydraulic Engineer, MS Civil Engineering, California State University, San Jose CA, USA; 5 years experience performing hydraulic engineering. Floodplain study.

Sharon Tang, Transportation Engineer Technician (Air/Noise); AA Business/Engineering, Sacramento City College; 5 years experience. Air Quality Report oversight.

Karen Thomas, Associate Environmental Planner; BA Environmental Studies, California State University, Sacramento; 18 years experience performing environmental studies and document preparation. Environmental document preparation and Community Impact Assessment.

Erick Wulf, Associate Environmental Planner, Archaeologist; BA, MA Anthropology, California State University, Sacramento; 19 years experience in California Archaeology. Historic Property Survey Report.

Saeid Zandian, Transportation Engineer; BS Civil Engineering, California State University, Sacramento; 11 years experience with Caltrans, Four years experience performing noise studies. Noise Study.

Fehr & Peers

David Stanek, Senior Transportation Engineer; Licensed Civil Engineer (C60390); Licensed Traffic Engineer (TR 2302); BS and MS Civil and Environmental Engineering, University of California at Davis; 10 years experience in traffic engineering. Traffic operations analysis.

Jones and Stokes

Shannon Hatcher, Air quality/noise specialist. BS, Environmental Science, Oregon State University, BS, Environmental Health and Safety, Oregon State University. 9 years experience. Air quality Report

James R. Allen, MS, PG, BS, Geology, Sonoma State University. MS, Geology, San Jose State University, California Licensure: CA-PG-8355; Nine years experience. Paleontological Identification Report, Paleontological Evaluation Report, Paleontological Mitigation Plan

Chapter 6 Distribution List

Federal Agencies and Tribal Representatives

National Marine Fisheries Service
Attn: Doug Hampton
650 Capital Mall, Suite 8-300
Sacramento, CA 95814-4706

United States Army Corps of Engineers
Attn: Paul Maniccia
Regulatory Branch
1325 J Street
Sacramento, CA 95814-2922

United States Army Corps of Engineers
Attn: Leah Fisher
Regulatory Branch
1325 J Street
Sacramento, CA 95814-2922

United States Environmental Protection Agency
Attn: Michael Monroe
75 Hawthorne Street
San Francisco, CA 94105

United States Fish and Wildlife Service
Attn: Holly Herod
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846

United States Department of the Interior
Bureau of Reclamation
Mid-Pacific Region
Central Valley Operations
3310 El Camino Ave., Room 300,
Sacramento, CA 95821

Randy Yonamura
4035 39th Street
Sacramento, CA 95824

State Agencies

California Air Resources Board
P.O. Box 2815
Sacramento, CA 95812

California Department of Education
School Facilities Planning Division
1430 N Street
Sacramento, CA 95814

California Department of General Services
Environmental Services Section
1325 J Street, Suite 1910
Sacramento, CA 95814-2928

California Department of Housing & Community Development
Housing Policy Division
P.O. Box 952053
Sacramento, CA 94252-2053

California Department of Water Resources
Division of Environmental Services
P. O. Box 942836
Sacramento, CA 94236-0001

California Department of Water Resources
Floodway Protection Section
Attn: Christopher Huitt
P. O. Box 942836
Sacramento, CA 94236-0001

California Department of Fish and Game
Attn: Todd Gardner
1701 Nimbus Road, Suite A
Rancho Cordova, CA 95670

California Department of Parks and Recreation
Resource Management Division
P.O. Box 942896
Sacramento, CA 94296-0001

California Department of Parks & Recreation
Capital District
Attn: Robert Baxter
111 I Street
Sacramento, CA 95814

California Energy Commission
P.O. Box 944295
Sacramento, CA 94244-2950

California Highway Patrol
P. O. Box 942898
Sacramento, California 94298-0001

California Integrated Waste Management Board
P.O. Box 4025
Sacramento, CA 95812-4025

California Office of Historic Preservation
P.O. Box 942896
Sacramento, CA 942896

California Public Utilities Commission
505 Van Ness Ave.
San Francisco, CA 94102

California Resources Agency
1416 Ninth Street, Suite 1311
Sacramento, CA 95814

California Reclamation Board
P. O. Box 942836
Sacramento, CA 94236

California State Lands Commission
100 Howe Ave., Suite 100-South
Sacramento, CA 95825-8202

California State Water Resources Control Board
Division of Water Quality
P.O. Box 100
Sacramento, CA 95812

Central Valley Regional Water Quality Control Board
Attn: Dannas J. Berchtold
11020 Sun Center Dr. #200
Rancho Cordova, CA 95670-6114

Governor's Office of Planning and Research
P.O. Box 3044
Sacramento, CA 95812-3044

Native American Heritage Commission
915 Capitol Mall, Room 364
Sacramento, CA 95814

California Transportation Commission
1120 N Street
Room 2221 (MS-52)
Sacramento, CA 95814

Local Agencies

City of Sacramento
City Clerk
730 I Street, Room 211
Sacramento, CA 95814

City of Sacramento
Department of Transportation
Attn: Azadeh Doherty
915 I Street, Room 2000
Sacramento, CA 95814-2604

Sacramento County
Clerk of the Board
700 H Street, Suite 2450
Sacramento, CA 95814

City of West Sacramento
1110 West Capitol Ave.
P.O. Box 966
West Sacramento, CA 95691

Yolo County
P.O. Box 1130
Woodland, CA 95776

Sacramento Air Quality Management District
Attn: Charlene McGhee
777 12th Street, 3rd Floor
Sacramento, CA 95814

Sacramento Regional Transit
P.O. Box 2110
Sacramento, CA 95812-2110

Mr. Brian Williams, Executive Director
Sacramento Transportation Authority
431 I Street, Suite 106
Sacramento, CA 95814-2320

Yolo County Transportation District
350 Industrial Way
Woodland CA 95776

Paratransit
2501 Florin Road
Sacramento, CA 95822

SACOG
1415 L Street, Suite 300
Sacramento, CA 95814

Sacramento Housing and Redevelopment Agency
630 I Street
Sacramento, CA 95814

MetroChamber
Sacramento Metropolitan Chamber of Commerce
One Capitol Mall, Suite 300
Sacramento, CA 95814

Sacramento Sheriff's Department
711 G Street
Sacramento, CA 95814

Sacramento City Police Department
5770 Freeport Boulevard, Ste 100
Sacramento, CA 95822

Sacramento City Fire Department
5770 Freeport Boulevard, Suite 200
Sacramento, CA 95822

Sacramento Metro Fire District
2101 Hurley Way
Sacramento, CA 95825

Sacramento Area Flood Control Agency
1007 7th Street, 7th Floor
Sacramento, CA 95814

Reclamation District 1000
1633 Garden Highway, Sacramento, CA 95833-9706

Schools and School Districts

California State University, Sacramento
6000 J Street
Sacramento, CA 95819

Los Rios Community College District
1919 Spanos Ct.
Sacramento, CA 95825

Natomas Unified School District
1901 Arena Boulevard
Sacramento, CA 95834

Federal Elected Officials

United States Congress
Doris Matsui, 5th District
Attn: Chris Flores
Robert T. Matsui U.S. Courthouse
501 I Street, Suite 12-600
Sacramento, CA
95814-7305

United States Senate
Barbara Boxer
501 I Street, Suite 7-600
Sacramento, CA 95814

United States Senate
Diane Feinstein
One Post Street, Suite 2450
San Francisco, CA 94104

State Elected Officials

California State Assembly, 5th District
Assembly Member Roger Niello
4811 Chippendale Dr. Suite 501
Sacramento, CA 95841

California State Assembly, 9th District
Assembly Member Dave Jones
California State Capitol
Room 3146
Sacramento, CA 94249-0009

California State Senate, 2nd District
Senator Darrell Steinberg
California State Capitol
Room 4035
Sacramento, CA 94248-0001

Local Elected Officials

Sacramento City Council
Mayor Kevin Johnson
915 I Street, 5th Floor
Sacramento, CA 95814

Sacramento City Council
District 1, Ray Tretheway
915 I Street, 5th Floor
Sacramento, CA 95814

Sacramento City Council
District 5, Lauren Hammond
915 I Street, 5th Floor
Sacramento, CA 95814

Sacramento County Board of Supervisors
District 1, Roger Dickinson
700 H Street, Suite 2450
Sacramento CA 95814

Other Individuals and Organizations

Environmental Council of Sacramento
909 12th Street, Suite 100
Sacramento, CA 95814

Sacramento Area Bicycle Advocates
909 12th Street, Suite 114
Sacramento, CA 95814-2931

Breathe California of Sacramento-Emigrant Trails
909 12th Street
Sacramento, CA 95814

California Alliance for Jobs
928 2nd Street, Suite 200
Sacramento, CA 95814

Downtown Sacramento Partnership
900 J Street, Second Floor
Sacramento, CA 95814

North Natomas Transportation Management Association, Becky Heieck, Executive Director
1960 Del Paso Road, Suite 146
Sacramento, CA 95834

Sacramento Group, Sierra Club
P.O. Box 161984
Sacramento, CA 95816-1984

Natomas Community Association
3291 Truxel Road, Suite 27
Sacramento, CA 95833

South Natomas Transportation Management
Association, Katherine Eastham, President
2030 West El Camino Avenue
Sacramento, CA 95833-1868

Chapter 7 References

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Appendix A CEQA Checklist

The following checklist identifies physical, biological, social, and economic factors that might be affected by the proposed project. CEQA impact levels include "potentially significant impact," "less than significant impact with mitigation," "less than significant impact," and "no impact."

Supporting documentation of all CEQA checklist determinations is provided in Chapter 2 of this Environmental Impact Report/Environmental Assessment. Documentation of "No Impact" determinations is provided at the beginning of Chapter 2. Except for noise, discussion of all impacts, avoidance, minimization, and/or mitigation measures is under the appropriate topic headings in Chapter 2. Noise impacts under CEQA are discussed in Chapter 3.

	Potentially Significant Impact	Less Than Significant 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 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. 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?	☐	☐	☐	☒
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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 Game or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	☐	☐	☒	☐
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☒	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☒	☐
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☐	☒	☐

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒
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. 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?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒
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?	☐	☐	☐	☒
VIII. 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?	☐	☐	☒	☐

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
f) Otherwise substantially degrade water quality?	☐	☐	☒	☐
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒
j) Inundation by seiche, tsunami, or mudflow	☐	☐	☐	☒
IX. 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?	☐	☐	☐	☒
X. 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?	☐	☐	☐	☒
XI. NOISE: Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	☐	☐	☐	☒
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☐	☒
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒
) 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?	☐	☐	☐	☒

XII. 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?	☐	☐	☐	☒

XIII. 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?	☐	☐	☐	☒

XIV. 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?	☐	☐	☐	☒

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
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?	☐	☐	☐	☒
XV. TRANSPORTATION/TRAFFIC: Would the project:				
a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections)?	☐	☐	☐	☒
b) Exceed, either individually or cumulatively, a level of service standard 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) Result in inadequate parking capacity?	☐	☐	☐	☒
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☐	☐	☒
XVI. 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 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?	☐	☐	☐	☒
XVII. 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, 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 ARNOLD SCHWARZENEGGER, Governor

DEPARTMENT OF TRANSPORTATION
OFFICE OF THE DIRECTOR
1120 N STREET
P. O. BOX 942873
SACRAMENTO, CA 94273-0001
PHONE (916) 654-5266
FAX (916) 654-6608
TTY (916) 653-4086

Flex your power!
Be energy efficient!

August 25, 2009

TITLE VI
POLICY STATEMENT

The California State 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, 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.

RANDELL H. IWASAKI
Director

"Caltrans improves mobility across California"

Appendix C Avoidance, Minimization, and/or Mitigation Summary

C.1 Avoidance and Minimization Measures

Traffic Impacts

Transportation management measures will be in place to minimize impacts on emergency services and transit operators. All work affecting traffic lanes will be at night and off-peak hours. Stage construction and temporary concrete barriers will be required. Construction of viaducts and other structures will require detouring/shifting traffic around the areas under work. A public awareness campaign, portable changeable message signs, and Construction Zone Enhanced Enforcement Program (COZEEP) will be included in the project. Lane closure charts will be developed during the PS&E phase of the project

Visual/ Aesthetics

All disturbed areas will be replanted with trees, shrubs, grasses, and new irrigation will be installed. The concrete retaining walls will have an aesthetic treatment to compensate for the additional height and visual impact. Integral brown color will be added to reduce glare and visual boredom. The chain link fence will have a dark coating to make it inconspicuous.

With the above project features, there would be no negative impacts to the visual environment.

Cultural Resources

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 are thought to be Native American, the coroner will notify the Native American Heritage Commission (NACH), who will then notify the Most Likely Descendent (MLD). At this time, the person who discovered the remains will contact the Caltrans District 3 Archaeologist 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 5097.98 are to be followed as applicable.

Hydrology/Floodplain

The mixed-flow connector and the San Juan Road Bridge will be designed to minimize their impacts on the floodplain.

Water Quality

The SWRCB has issued Caltrans a Statewide NPDES Permit (Board Order 99-06-DWQ). This permit regulates the storm water and non-storm water discharges associated with project construction activities and discharges associated with normal maintenance and operations of Caltrans facilities. The permit also serves as a State of California Waste Discharge Requirement. Compliance with this permit requires that the appropriate BMPs are employed that achieve the performance standards of Best Available Technology Economically Achievable/Best Conventional Pollutant Control Technology to reduce or eliminate storm water pollution. To limit any sediments and pollutants from impacting drainages as well as diminish erosion in the project area, BMPs will be implemented during construction.

Construction Activity Permitting: Caltrans' NPDES permit is linked to the Construction General Permit; Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction Activities (Order No. 99-08 DWQ) which regulates discharges from construction sites. By law, all storm water discharges associated with construction activity where clearing, grading, and excavation results in soil disturbance of at least 1 acre of total land area, such as this project, must comply with the provisions of this NPDES Permit and develop and implement an effective Storm Water Pollution Prevention Plan (SWPPP). Caltrans' requires the submission of a Notification of Construction (NOC) to the RWQCB at least 30 days prior to construction and prepare the SWPPP prior to the beginning of construction. Implementation of the SWPPP starts with the commencement of construction and continues through the completion of the project. Upon completion of the project, Caltrans must submit a Notice of Completion of Construction (NOCC) to the RWQCB to indicate that construction is complete.

Construction Dewatering Permit: Construction dewatering activity is defined as pumped or drained discharges of groundwater and/or storm water from excavations or other points of accumulation associated with a construction activity. Dewatering discharges cannot be considered as an automatic conditionally exempt discharge through the permit, but rather it may be conditionally exempt once the proposed discharge is reported, reviewed, and approved on case-by-case basis by the Central Valley RWQCB. Otherwise, Caltrans must implement the appropriate BMPs to meet the conditions of the Central Valley RWQCB to ensure dewatering is not a source of pollutants in the storm drain system or surface water once it is discharged. The project is not anticipating dewatering. However, any dewatering that may take place due to the number of irrigation ditches within the project limits will be coordinated with Central Valley RWQCB during the PS&E phase through the Caltrans district NPDES coordinator.

The proposed project is not expected to cause substantial downstream erosion or siltation. However, the practices outlined in the Storm Water Management Plan and Statewide Storm Water Practice Guidelines ensure that certain minimum design elements be incorporated into projects to maintain or improve water quality. The key elements are as follows:

- Prevent Downstream Erosion – design of drainage facilities to avoid causing or contributing to downstream erosion. Drainage outfalls, when appropriate, will discharge to suitable control measures.

- Stabilize Disturbed Soil Areas – design would incorporate stabilization of disturbed areas (when appropriate) with seeding, vegetative or other types of cover.

- Maximize Existing Vegetative Surfaces – design would limit footprints of cuts and fills to minimize removal of existing vegetation.

With the preceding measures in place through the design of the project , along with BMPs during construction, the project as planned would not create a substantial increase in downstream erosion or siltation.

Paleontology

A Paleontological Monitoring and Curation Plan would be implemented. This plan contains guidance in the following areas:

- The contract and task order requirements for monitoring and mitigation.
- The general field and laboratory methods proposed.
- Any relevant curation requirements.
- An overview of report content and format.
- Proposed report distribution.
- The staff qualifications needed to implement the PMP.

When the final grading plans are prepared, a qualified paleontologist responsible for conducting the mitigation will review the final depths of disturbance, assess the potential for disturbance of known and potentially fossiliferous strata, and adjust the mitigation plan if needed.

Hazardous Waste

During project construction activities, removing ACMs must be accomplished by an appropriately certified contractor in a way that contains, collects, and disposes of the small quantity of ACM in accordance with state and federal law. Appropriate Special Provisions for this work should be included in the project's construction contract; the Contractor is responsible to do this notification in a timely manner.

Surplus excavated soil if any, along I-80 with the exception of Truxel Road ramps, will not be disposed of outside the project limits without being sampled and tested to determine the level of ADL contamination in order to ensure that the waste soil is appropriately disposed of as a hazardous, regulated or unregulated waste, or whether the soils are suitable for reuse or disposal with no restrictions.

Caltrans will ensure that a Health and Safety Plan is implemented and addresses the potential effects of the various chemical compounds that could be encountered within the project area. The Health and Safety Plan will include evaluations of the suspected chemical hazards, including symptoms of exposure and emergency treatment, appropriate use of personal protection equipment, and air monitoring.

The Contractor shall prepare a project specific "Lead Compliance Plan" pursuant to Title 8 of the California Code of Regulations - Section 1532.1, to prevent or minimize worker exposure to lead.

Any removed yellow traffic stripe material will be tested prior to disposal at an appropriate waste facility. Appropriate Special Provisions for this work shall be included in the project's construction contract.

The routine use of hazardous materials, such as gasoline or diesel fuel for construction equipment, will be required by the project. Equipment to clean up fuel leaks and spills will be available at each project construction location. The Contractor will be required to safely store materials and immediately clean up spills if they occur.

Air Quality

Most of the construction impacts to air quality are short-term in duration and, therefore, will not result in adverse or long-term conditions. Implementation of the following measures will reduce any air quality impacts resulting from construction activities:

- The Contractor shall comply with *Caltrans Standard Specifications* Section 14-9.01 and Section 10 of *Caltrans Standard Specifications* (2006).
- Water or dust palliative will be applied to the site and equipment as frequently as necessary to control fugitive dust emissions.
- Soil binder will be spread on any unpaved roads used for construction purposes, and all project construction parking areas.
- Trucks will be washed off as they leave the right of way as necessary to control fugitive dust emissions.
- Construction equipment and vehicles shall be properly tuned and maintained. Low-sulfur fuel shall be used in all construction equipment as provided in California Code of Regulations Title 17, Section 93114.

- Develop a dust control plan documenting sprinkling, temporary paving, speed limits, and expedited revegetation of disturbed slopes as needed to minimize construction impacts to existing communities.
- Locate equipment and materials storage sites as far away from residential and park uses as practical. Keep construction areas clean and orderly.
- To the extent feasible, establish ESAs for sensitive air receptors within which construction activities involving extended idling of diesel equipment would be prohibited.
- Use track-out reduction measures such as gravel pads at project access points to minimize dust and mud deposits on roads affected by construction traffic.
- Cover all transported loads of soils and wet materials prior to transport, or provide adequate freeboard (space from the top of the material to the top of the truck) to reduce PM_{10} and deposition of particulate during transportation.
- Remove dust and mud that are deposited on paved, public roads due to construction activity and traffic to decrease particulate matter.
- To the extent feasible, route and schedule construction traffic to reduce congestion and related air quality impacts caused by idling vehicles along local roads during peak travel times.
- Install mulch or plant vegetation as soon as practical after grading to reduce windblown particulate in the area.
- If NOA is found during construction, rules and regulation of the Sacramento Metropolitan Air Quality Management District regarding NOA must be adhered to when handling this material.

Wetlands and Other Waters of the US

The proposed project footprint was designed to minimize the addition of paved and disturbed areas where possible. The proposed interchange modification includes flyover connectors which have a much smaller footprint than standard ramp connectors, decreasing potential impacts to wetlands. Work within bridge areas, with the exception of the San Juan Bridge, has been designed within the limits of the existing structures.

In order to avoid permanent impacts to the East Natomas DC, the replacement of the San Juan Bridge was redesigned to follow the existing alignment. This design change avoided 0.006 acres of impacts to the East Natomas DC which is classified as 'Other Waters of the US and under the jurisdiction of the USACE.

Roadside ditches that are affected by this project will be re-graded at the toe of slope of the widened structure.

Environmentally Sensitive Areas (ESAs) will be identified around Wetlands and Other Waters of the US that will not be affected by the project. ESA fencing will be installed to prevent unintentional impacts to these areas.

Burrowing Owl

A qualified biologist shall survey suitable habitat in the ESL and adjacent areas for burrowing owls no more than 30 days prior to the start of construction. If burrowing owls or signs of burrowing owls are detected, CDFG shall be contacted to determine the best course of action.

Swainsons' Hawk

The project design avoids impacts to nesting habitat of this species. The proposed interchange modification includes flyover connectors which have a much smaller footprint than standard ramp connectors which decreased the impact to Swainson's hawk foraging habitat. Due to the extended period of time between the circulation of this document and construction of the project, surveys will be conducted by a qualified biologist with sufficient time prior to construction to consult with CDFG regarding a 2081 Incidental Take Permit if any Swainson's hawks have begun nesting within the ESL and the nest tree will be affected by the project.

Giant Garter Snake

Environmental study areas (ESAs) will be established and marked by highly visible ESA fencing prior to the start of construction within giant garter snake potential habitat areas. These areas will separate the work area from the remaining giant garter snake upland habitat and the giant garter snake aquatic habitat. Contractor encroachment, including the staging/operation of heavy equipment or casting of excavation materials, into ESAs will be prohibited. ESA provisions shall be implemented as a first order of work, and remain in place until all construction activities are complete.

The following measures listed in the "Standard Avoidance and Minimization Measures During Construction Activities in Giant Garter Snake *(Thamnophis gigas)* Habitat" (USFWS 2005a) outlined below.

1) When feasible, avoid construction activities within 200 feet from the banks of giant garter snake aquatic habitat. Confine movement of heavy equipment to existing roadways to minimize habitat disturbance.

2) Construction activity within habitat should be conducted between May 1 and October 1. This is the active period for giant garter snakes and direct mortality is lessened, because snakes are expected to actively move and avoid danger. Between October 2 and April 30 contact the Service's Sacramento Fish and Wildlife Office to determine if additional measures are necessary to minimize and avoid take.

3) Confine clearing to the minimal area necessary to facilitate construction activities. Flag and designate avoided giant garter snake habitat within or adjacent to the project area as ESAs, as outlined above. These areas should be avoided by all construction personnel.

4) Construction personnel should receive Service-approved worker environmental awareness training. This training instructs workers to recognize giant garter snakes and their habitat(s).

5) 24-hours prior to construction activities, the ESL will be surveyed for giant garter snake. Surveys of the ESL will be repeated if a lapse in construction activity of two weeks or greater has occurred. If a snake is encountered during construction, activities shall cease until appropriate corrective measures have been completed or it has been determined that the snake will not be harmed. Report any sightings and any incidental take to the Service immediately by telephone at (916) 414-6600.

6) Any dewatered habitat should remain dry for at least 15 consecutive days after April 15 and prior to excavating or filling of the dewatered habitat.

7) After completion of construction activities, remove any temporary fill and construction debris and, wherever feasible, restore disturbed areas to pre-project conditions. Restoration work may include such activities as replanting species removed from banks or replanting emergent vegetation in the active channel.

8) Follow the conservation measures in Table 27 to minimize the effects of loss and disturbance of habitat on giant garter snakes. Replacement ratios are based on the acreage and on the duration of disturbance.

Table 43 Summary of Giant Garter Snake Conservation Measures

EFFECTS:	**EFFECTS:**	**CONSERVATION MEASURE:**
Temporary (1 season)	Temporary impacts will not exceed 20 acres and no permanent impacts.	Restoration
Temporary (2 seasons)	Temporary impacts will not exceed 20 acres and no permanent impacts.	Restoration plus 1:1 replacement
Temporary (More than 2 seasons)	Temporary impacts will not exceed 20 acres and no permanent impacts.	3:1 Replacement (or restoration plus 2:1 replacement)
Permanent loss	The project will not exceed three acres of giant garter snake habitat and will impact less than one acre of aquatic habitat.	3:1 Replacement

Giant garter snake habitat includes two acres of surrounding upland habitat for every one acre of aquatic habitat. The two acres of upland habitat also may be defined as 218 linear feet of bankside habitat that incorporates adjacent uplands to a width of 200 feet from the edge of each bank. Each acre of created aquatic habitat should be supported by two acres of surrounding upland habitat. Compensation may include creating upland refuges and locations for the snake to hibernate for the giant garter snake that are above the 100-year floodplain. A

season is defined as the calendar year period between May 1 and October 1, the active period for giant garter snake when mortality is less likely to occur.

Giant Garter Snake Habitat Restoration: Following project completion, all areas temporarily disturbed during construction will be restored following the "Guidelines for Restoration and/or Replacement of Giant Garter Snake Habitat", outlined below.

6) Re-grade the area to pre-project contour, or a contour that would improve restoration potential of the site.

7) Replant and hydroseed the restoration area. Recommended plantings consist of a) wetland emergents, b) low-growing cover on or adjacent to banks, and c) upland plantings/hydroseeding mix to encourage use by other wildlife. Riparian plantings are not appropriate because shading may result in lack of basking sites. Native plantings are encouraged except where non-natives will provide additional values to wildlife habitat and will not become invasive in native communities.

8) Emergent wetland plants recommended for giant garter snake habitat are California bulrush, cattail, and water primrose. Additional wetland plantings may include common tule, Baltic rush or duckweed.

9) Cover species on or adjacent to the bank may include California blackberry or California wild grape along with the hydroseeding mix recommended below.

10) Upland plantings/hydroseeding mix: Disturbed soil surfaces such as levee slopes should be hydroseeded to prevent erosion. The Service recommends a mix of at least 20-40 percent native grass seeds such as annual fescue, California brome, blue wild rye, and needle grass; 2-10 percent native forb seeds, five percent rose clover and five percent alfalfa. Approximately 40-68 percent of the mixture may be non-aggressive European annual grasses such as wild oats, wheat and barley. Aggressive non-native grasses will not be included in the hydroseed mix. Mixes of one hundred percent native grasses and forbs may also be used, and are encouraged.

Migratory Birds

The following avoidance and minimization measures will be implemented to minimize potential effects to special-status animal species:

01 – Establish Environmentally Sensitive Areas
02 – Limit Vegetation Removal
03 – Containment Measures/Construction Site Best Management Practices
04 – Minimize Disturbance to Jurisdictional Waters
05 – Restore Wetland, Riparian, and Stream Habitat Disturbed by Construction

06 – Dewatering Activities
07 – Restrict Timing of In-Stream Activities
09 – Restrict Timing of Woody Vegetation Removal
10 – Nesting Bird Surveys
11 – Pre-construction Pond Turtle Surveys
12 – Pre-construction Burrowing Owl Surveys
15 – Pre-construction Roosting Bat Surveys
16 – Bird and Bat Exclusion Measures

Invasive Species

In compliance with the Executive Order on Invasive Species, E.O. 13112, and subsequent guidance from the Federal Highway Administration, the landscaping and erosion control included in the project will not use species listed as noxious weeds. In areas of particular sensitivity, extra precautions will be taken if invasive species are found in or adjacent to the construction areas. These include the inspection and cleaning of construction equipment and eradication strategies to be implemented should an invasion occur.

C.2 Mitigation Measures

Visual Impacts

Nineteen acres of new trees, shrubs and irrigation systems will be installed between the property line and the new auxiliary lanes as compensation for the loss of vegetation and highway planting.

Swainsons' Hawk

Compensatory mitigation for impacts to Swainson's hawk foraging habitat will follow the Staff Report Regarding Mitigation for Impacts to Swainson's Hawks in the Central Valley of California (DFG, 1994). As outlined, impacts to foraging habitat shall be mitigated for at a 1:1 ratio for impacts within one mile of an active nest, thus 9.85 acres of Swainson's hawk foraging habitat mitigation will be needed.

Giant Garter Snake

Compensatory mitigation shall be determined according to the "Standard Avoidance and Minimization Measures During Construction Activities in Giant Garter Snake Habitat" (USFWS 2005a). Temporary impacts are expected to last for one season and will be revegetated following the measures outlined in Section 2.26.10.

Permanent impacts will be compensated for at a 3:1 ratio. A total of 5.28 acres of giant garter snake upland habitat mitigation will be required to fully compensate for project impacts. All

mitigation will be completed within the Sacramento River watershed and will be approved by USFWS.

Wetlands and other waters

Impacts to jurisdictional wetlands and other Waters of the United States will be mitigated at a 1:1 ratio at an USACE approved mitigation bank. An estimated 0.227 acres or mitigation credits will be required to mitigate for project impacts

Appendix D Mobile Source Air Toxics- Information That Is Unavailable Or Incomplete

Information That Is Unavailable or Incomplete

Evaluating the environmental and health impacts from mobile source air toxics (MSATs) on a proposed highway project would involve several key elements, including emissions modeling, dispersion modeling in order to estimate ambient concentrations resulting from the estimated emissions, exposure modeling in order to estimate human exposure to the estimated concentrations, and then final determination of health impacts based on the estimated exposure. Each of these steps is encumbered by technical shortcomings or uncertain science that prevents a more complete determination of the MSAT health impacts of this project.

Emissions

The United States Environmental Protection Agency (USEPA) tools to estimate MSAT emissions from motor vehicles are not sensitive to key variables determining emissions of MSATs in the context of highway projects. While MOBILE 6.2 is used to predict emissions at a regional level, it has limited applicability at the project level. MOBILE 6.2 is a trip-based model—emission factors are projected based on a typical trip of 7.5 miles, and on average speeds for this typical trip. This means that MOBILE 6.2 does not have the ability to predict emission factors for a specific vehicle operating condition at a specific location at a specific time. Because of this limitation, MOBILE 6.2 can only approximate the operating speeds and levels of congestion likely to be present on the largest-scale projects, and cannot adequately capture emissions effects of smaller projects. For particulate matter, the model results are not sensitive to average trip speed, although the other MSAT emission rates do change with changes in trip speed. Also, the emissions rates used in MOBILE 6.2 for both particulate matter and MSATs are based on a limited number of tests of mostly older-technology vehicles. Lastly, in its discussions of PM under the conformity rule, EPA has identified problems with MOBILE 6.2 as an obstacle to quantitative analysis.

These deficiencies compromise the capability of MOBILE 6.2 to estimate MSAT emissions. MOBILE 6.2 is an adequate tool for projecting emissions trends, and performing relative analyses between alternatives for very large projects, but it is not sensitive enough to capture the effects of travel changes tied to smaller projects or to predict emissions near specific roadside locations.

Dispersion

The tools to predict how MSATs disperse are also limited. The USEPA's current regulatory models, CALINE3 and CAL3QHC, were developed and validated more than a decade ago for the purpose of predicting episodic concentrations of carbon monoxide to determine compliance with the National Ambient Air Quality Standards (NAAQS). The performance of dispersion models is more accurate for predicting maximum concentrations that can occur at

some time at some location within a geographic area. This limitation makes it difficult to predict accurate exposure patterns at specific times at specific highway project locations across an urban area to assess potential health risk. The National Cooperative Highway Research Program is conducting research on best practices in applying models and other technical methods in the analysis of MSATs. This work also will focus on identifying appropriate methods of documenting and communicating MSAT impacts in the National Environmental Policy Act (NEPA) process and to the general public. Along with these general limitations of dispersion models, the Federal Highway Administration (FHWA) is also faced with a lack of monitoring data in most areas for use in establishing project-specific MSAT background concentrations.

Exposure Levels and Health Effects

Finally, even if emission levels and concentrations of MSATs could be accurately predicted, shortcomings in current techniques for exposure assessment and risk analysis preclude us from reaching meaningful conclusions about project-specific health impacts. Exposure assessments are difficult because it is difficult to accurately calculate annual concentrations of MSATs near roadways, and to determine the portion of a year that people are actually exposed to those concentrations at a specific location. These difficulties are magnified for 70-year cancer assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over a 70-year period. There are also considerable uncertainties associated with the existing estimates of toxicity of the various MSATs, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population. Because of these shortcomings, any calculated difference in health impacts between alternatives is likely to be much smaller than the uncertainties associated with calculating the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against other project impacts that are better suited for quantitative analysis.

Summary of Existing Credible Scientific Evidence Relevant to Evaluating the Impacts of MSATs

Research into the health impacts of MSATs is ongoing. For different emission types, there are a variety of studies that show that some either are statistically associated with adverse health outcomes through epidemiological studies (frequently based on emissions levels found in occupational settings) or that animals demonstrate adverse health outcomes when exposed to large doses.

Exposure to toxics has been a focus of a number of EPA efforts. Most notably, the agency conducted the National Air Toxics Assessment (NATA) in 1996 to evaluate modeled estimates of human exposure applicable to the county level. While not intended for use as a measure of or benchmark for local exposure, the modeled estimates in the NATA database

best illustrate the levels of various toxics when aggregated to a national or state level.

The USEPA is in the process of assessing the risks of various kinds of exposures to these pollutants. The USEPA Integrated Risk Information System (IRIS) is a database of human health effects that may result from exposure to various substances found in the environment. The IRIS database is located at http://www.epa.gov/iris. The following toxicity information for the six prioritized MSATs was taken from the IRIS database Weight of Evidence Characterization summaries. This information is taken verbatim from USEPA's IRIS database and represents the Agency's most current evaluations of the potential hazards and toxicology of these chemicals or mixtures.

- Benzene is characterized as a known human carcinogen.
- The potential carcinogenicity of acrolein cannot be determined because the existing data are inadequate for an assessment of human carcinogenic potential for either the oral or inhalation route of exposure.
- Formaldehyde is a probable human carcinogen, based on limited evidence in humans, and sufficient evidence in animals.
- 1,3-butadiene is characterized as carcinogenic to humans by inhalation.
- Acetaldehyde is a probable human carcinogen based on increased incidence of nasal tumors in male and female rats and laryngeal tumors in male and female hamsters after inhalation exposure.
- Diesel exhaust is likely to be carcinogenic to humans by inhalation from environmental exposures. Diesel exhaust as reviewed in this document is the combination of diesel particulate matter and diesel exhaust organic gases.
- Diesel exhaust also represents chronic respiratory effects, possibly the primary noncancer hazard from MSATs. Prolonged exposures may impair pulmonary function and could produce symptoms, such as cough, phlegm, and chronic bronchitis. Exposure relationships have not been developed from these studies.

There have been other studies that address MSAT health impacts in proximity to roadways. The Health Effects Institute, a nonprofit organization funded by EPA, FHWA, and industry, has undertaken a major series of studies to research near-roadway MSAT hot spots, the health implications of the entire mix of mobile source pollutants, and other topics. The final summary of the series is not expected for several years.

Some recent studies have reported that proximity to roadways is related to adverse health

outcomes—particularly respiratory problems.[5] Much of this research is not specific to MSATs, instead surveying the full spectrum of both criteria and other pollutants. The FHWA cannot evaluate the validity of these studies, but more importantly, they do not provide information that would be useful to alleviate the uncertainties listed above and enable us to perform a more comprehensive evaluation of the health impacts specific to this project.

Relevance of Unavailable or Incomplete Information to Evaluating Reasonably Foreseeable Significant Adverse Impacts on the Environment, and Evaluation of Impacts Based upon Theoretical Approaches or Research Methods Generally Accepted in the Scientific Community

Because of the uncertainties outlined above, a quantitative assessment of the effects of air toxic emissions impacts on human health cannot be made at the project level. While available tools do allow us to reasonably predict relative emissions changes between alternatives for larger projects, the amount of MSAT emissions from each of the project alternatives and MSAT concentrations or exposures created by each of the project alternatives cannot be predicted with enough accuracy to be useful in estimating health impacts. (As noted above, the current emissions model is not capable of serving as a meaningful emissions analysis tool for smaller projects.) Therefore, the relevance of the unavailable or incomplete information is that it is not possible to make a determination of whether any of the alternatives would have "significant adverse impacts on the human environment."

In this document, Caltrans, as assigned by FHWA, has provided a qualitative analysis of MSAT emissions relative to the various alternatives, and has acknowledged that (some, all, or identify by alternative) the project alternatives may result in increased exposure to MSAT emissions in certain locations, although the concentrations and duration of exposures are uncertain, and because of this uncertainty, the health effects from these emissions cannot be estimated.

[5] South Coast Air Quality Management District, Multiple Air Toxic Exposure Study-II (2000); Highway Health Hazards, The Sierra Club (2004) summarizing 24 Studies on the relationship between health and air quality); NEPA's Uncertainty in the Federal Legal Scheme Controlling Air Pollution from Motor Vehicles, Environmental Law Institute, 35 ELR 10273 (2005) with health studies cited therein.

Appendix E Glossary of Technical Terms

This appendix briefly explains the technical terms and names used in this EIR/EA. A list of acronyms appears directly before Chapter 1.

Alluvial Fan	The soil deposits of a stream where it exits from a gorge upon a plain, or the deposits of a tributary stream at its junction with the main stream
Alluvium	Clay, sand, silt, gravel, or similar material deposited by running water.
Auxiliary Lane	A traffic lane used to facilitate mainline through-traffic movements. The auxiliary lanes allow traffic entering and exiting the freeway to accelerate or decelerate outside of the through traffic lanes.
Best Management Practice (BMP)	Any program, technology, process, operating method, measure or device that controls, prevents, removes or reduces pollution.
Capacity	The maximum amount of traffic that can be accommodated by a uniform segment of freeway under prevailing conditions.
Corridor	A strip of land between two termini within which traffic, topography, environment, and other characteristics are evaluated for transportation purposes.
Cumulative effects	Project effects that are related to other actions with individually insignificant but cumulatively significant impacts.
DBH	Diameter (of a tree) measured at breast height.
Decibel	A numerical expression of the relative loudness of a sound.
Encroachment (floodplain)	An action within the limits of the 100-year floodplain.
Endangered Species	Plant or animal species that are in danger of extinction throughout all or a significant portion of its range.
Erosion	The wearing away of the land surface by running water, wind, ice, or other geological agents.
Expansive soils	Soil deposits that have the capacity or a tendency to expand during weather or seismic events.
Federal Register	A federal publication that provides official notice of federal administrative hearings and issuance of proposed and final federal administrative rules and regulations.
Floodplain (100-year)	The area subject to flooding by a flood or tide that has a 1 percent chance of being exceeded in any given year.
FONSI	Finding of No Significant Impact—a document by a federal agency briefly

	presenting the reasons why an action, not otherwise categorically excluded, will not have a significant effect on the human environment and therefore does not require the preparation of an EIS. A FONSI is the federal equivalent of a Negative Declaration.
Freeway	A divided arterial highway with full control of access and with grade separations at intersections.
Habitat	The place or type of site where a plant or animal naturally or normally lives and grows.
Holocene	The second epoch of the Quaternary Period characterized by man and modern animals.
Initial Site Assessment (ISA)	A Caltrans term for an initial study to determine hazardous waste issues on a project.
Lane Numbering	On a multi-lane roadway, the traffic lanes traveling in the same direction are numbered from the left to the right, beginning with #1. The leftmost lane is the #1 lane, and is usually referred to by the public as the fast or passing lane.
Lead Agency	The public agency which has primary responsibility for carrying out or approving a project which may have a significant effect on the environment and preparing the environmental document.
Leq	A unit used for evaluation of sound impacts, Leq is the measurement of the fluctuating sound level received by a receptor averaged over a time interval (usually 1 hour).
Level of Service (LOS)	A measurement of capacity of a roadway.
Maintenance Area	A federal term to describe any geographic region of the United States designated nonattainment pursuant to the Clean Air Act Amendments of 1990 (CAAA) and subsequently redesignated to attainment subject to the requirement to develop a maintenance plan under Section 175A of the CAAA.
Median	The area of a divided highway that separates the traveled way for traffic in opposite directions.
Mixed flow lane	An-restricted traffic lane for all types of vehicles, including single-occupant cars, carpools, vans, buses, and trucks.
MTP	Metropolitan Transportation Plan—the official intermodal transportation plan that is developed and adopted through the metropolitan transportation planning process for the metropolitan planning area.
NOA	Notice of Availability—a formal public notice under NEPA announcing the availability of a completed EA, DEIS, or FEIS. Such notice is to be published in local newspapers. For EISs, publication of such notice in the Federal Register is also required.
NOC	Notice of Completion—the CEQA notice submitted to the State Clearinghouse when an EIR is completed. For Caltrans EIRs, the requirement for a Notice of Completion is satisfied by the cover sheet transmitting the EIR to the Clearinghouse.

NOD	Notice of Determination—a formal written notice under CEQA filed by a lead state agency when approving any project subject to the preparation of an ND or EIR.
Non-attainment Area	Any geographic region of the United States that the Environmental Protection Agency (EPA) has designated as a nonattainment area for a transportation related pollutant(s) for which a National Ambient Air Quality Standard (NAAQS) exists.
NOP	Notice of Preparation—the CEQA notice that an EIR will be prepared for a project
NPDES	National Pollutant Discharge Elimination System Permit which is required for facilities and activities that discharge waste into surface waters from a confined pipe or channel.
Pleistocene	The first epoch of the Quaternary Period characterized by the first indications of social life in man.
Pliocene	The first epoch of the Tertiary Period characterized by the transition from hominids to early humans
Practicable	An action that is capable of being done after taking into consideration cost, existing technology and logistics in light of overall project purposes.
Quaternary Period	A geologic period, which includes both the Pleistocene and Holocene Periods, comprising the second portion of the Cenozoic era; characterized by the rise of man and modern animals.
Receptors	Term used in air quality and noise studies that refers to houses or businesses that could be affected by a project.
Regulatory agency	An agency that has jurisdiction by law.
Responsible agency	A “public agency, other than the lead agency which has responsibility for carrying out or approving a project” (PRC 21069). The CEQA Guidelines further explains the statutory definition by stating that a “responsible agency” includes “all public agencies other than the Lead Agency which have discretionary approval power over the project” (14 CCR 15381). State and local public agencies that have discretionary authority to issue permits, for example, fall into this category.
Right-of-way	A general term denoting land, property, or interest therein, usually in a strip, acquired for or devoted to transportation purposes.
Riparian	Pertaining to the banks and other adjacent terrestrial (as opposed to aquatic) environs of freshwater bodies, watercourses, estuaries, and surface-emergent aquifers, whose transported freshwater provides soil moisture sufficient in excess of that available through local precipitation to potentially support the growth of vegetation.
ROD	The “Record of Decision” is a formal written statement, required under NEPA, wherein a federal lead agency must present the basis for its decision to approve a selected project alternative, summarize mitigation measures incorporated into the project an document any required Section 4(f) approval.
RTP	“...the official intermodal metropolitan transportation plan that is developed through the metropolitan planning process for the metropolitan planning area, developed pursuant to 23 CFR part 450.”

Scoping	A process for determining the scope of issues to be addressed in an EA and EIS and for identifying significant issues to be analyzed in depth in an EIS.
Special-status species	Plant or animal species that are either (1) federally listed, proposed for or a candidate for listing as threatened or endangered; (2) bird species protected under the federal Migratory Bird Treaty Act; (3) protected under state endangered species laws and regulations, plant protection laws and regulations, Fish and Game codes, or species of special concern listings and policies; (4) recognized by national, state, or local environmental organizations (e.g., California Native Plant Society).
SIP	The State Implementation Plan (SIP) means the portion (or portions) of an applicable implementation plan approved or promulgated, or the most recent revision thereof, under Sections 110, 301(d) and 175A of the Clean Air Act.
STIP	The Statewide Transportation Improvement Plan (STIP) means a staged, multiyear, statewide, intermodal program of transportation projects which is consistent with the Statewide transportation plan and planning processes and metropolitan plans, TIPs and processes.
SWPPP	A Storm Water Pollution Prevention Plan is prepared to evaluate sources of discharges and activities that may affect storm water runoff, and implement measures or practices to reduce or prevent such discharges.
Threatened Species	A species that is likely to become endangered in the foreseeable future in the absence of special protection.
Tract	A standard geographical unit of measurement defined by the U.S. Census Bureau.
Transportation Control Measure	Transportation Control Measure, any measure specifically identified and committed to in the applicable implementation plan that is either one of the types listed in § 108 of the CAA, or any other measure for the purpose of reducing emissions or concentrations of air pollutants from transportation sources by reducing vehicle use or changing traffic flow or congestion conditions. Notwithstanding the above, vehicle technology-based, fuel-base, and maintenance-based measures that control the emissions from vehicles under fixed traffic conditions are not TCMs for the purposes of project-level conformity.
Trustee Agency	"A state agency having jurisdiction by law over natural resources affected by project which are held in trust for the people of the State of California. Trustee agencies include: a) the California Department of Fish and Game with regard to the fish and wildlife of the state, to designated rare or endangered native plants, and to game refuges, ecological preserves, and other areas administered by the department; b) the State Lands Commission with regard to state owned "sovereign" lands such as the beds of navigable waters and state school lands; c) the State Department of Parks and Recreation with regard to units of the State Park System; and d) the University of California with regard to sites within the Natural Land and Water Reserves System" (14 CCR 15386).

Waters of the United States	As defined by the USACE in 33 CFR 328.3(a): 1. All waters that are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters that are subject to the ebb and flow of the tide; 2. All interstate waters including interstate wetlands; 3. All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce, including any such waters: (i) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or (ii) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or (iii) Which are used or could be used for industrial purposes by industries in interstate commerce; 4. All impoundment of waters otherwise defined as waters of the United States under this definition; 5. Tributaries of waters identified in paragraphs 1-4; 6. The territorial seas; 7. Wetlands adjacent to waters (waters that are not wetlands themselves) identified in paragraphs 1-6.
Wetlands	When used in a formal context, such as in this EIR/EA, wetlands are areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances will support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas [33 CFR 328.3(b)].

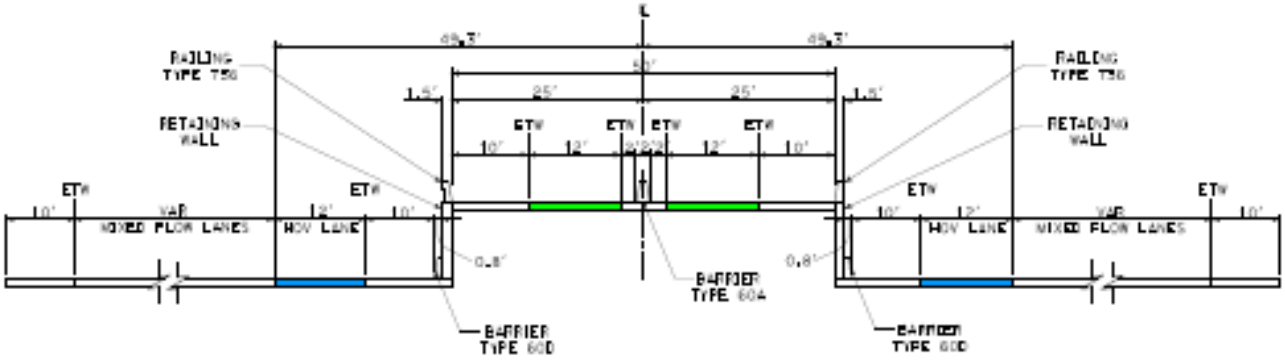
Appendix F Project Layout

Appendix G List of Technical Studies Prepared under Separate Cover

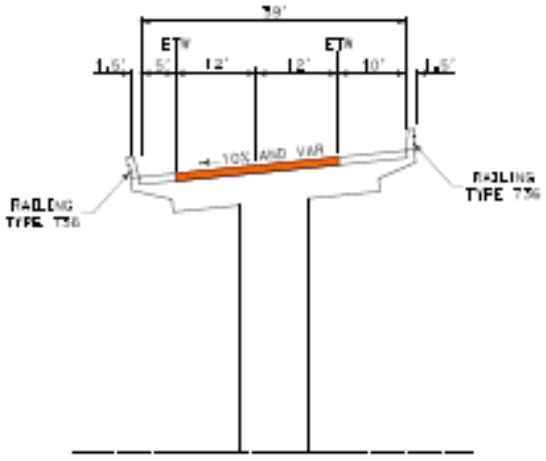
The following technical studies were prepared to support this environmental document and are available for review at Caltrans District 3 Sacramento Office, 2800 Gateway Oaks Dr., Sacramento, CA, 95833.

- Air Quality Analysis Report (June 2009).
- Community Impact Assessment (November 2008).
- Floodplain Report (November 2006).
- Geotech Report (November 2006).
- Historic Property Survey Report (March 2008).
- Initial Site Assessment (ISA) (October 2008).
- Natural Environment Study (October 2009).
- Noise Impact Study (October 2008).
- Traffic Report, HOV Report and Technical Memorandum (August 2008).
- Visual Impact Assessment (September 2009).
- Water Quality Report (January 2008).
- Paleontological Identification Report (November 2007).
- Paleontological Evaluation Report (February 2008).
- Paleontological Mitigation Plan (March 2008).

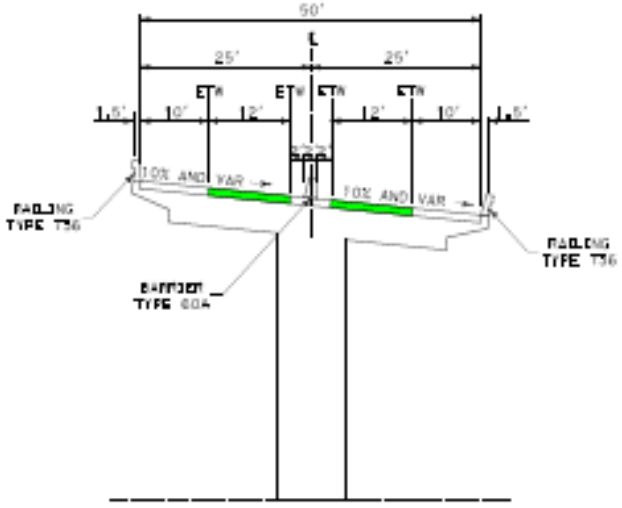
Appendix H Typical Cross-section



RISING HOV CONNECTOR



ELEVATED MIX-FLOW CONNECTOR



ELEVATED HOV CONNECTOR