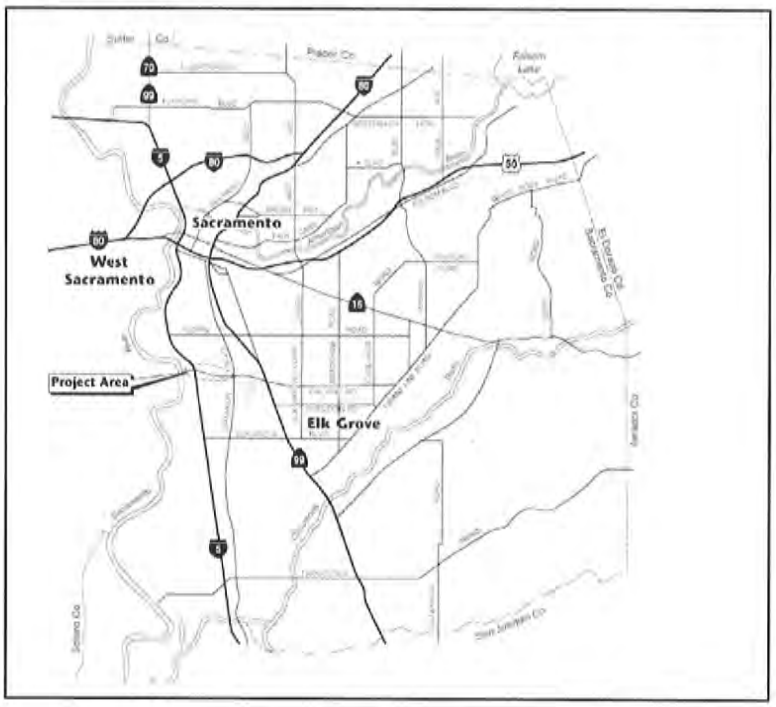
Interstate 5/Cosumnes River Boulevard Interchange Project



Draft Environmental Impact Statement/ Environmental Impact Report

In the City and County of Sacramento, California

Extension of Cosumnes River Boulevard
From Franklin Boulevard to Freeport Boulevard
With an Interchange at Interstate 5
South of the Pocket/Meadowview Road Interchange and
North of the Laguna Boulevard Interchange
03-Sac-5-KP 23.0/24.9 (PM 14.3/15.5)

EA: 1C5200/ SCH: 2002022072

February 2006

GENERAL INFORMATION ABOUT THIS DOCUMENT

What's in this document:
The City of Sacramento and the Federal Highway Administration (FHWA) have prepared this Draft Environmental Impact Statement/Environmental Impact Report (Draft EIS/EIR), which examines the potential environmental impacts of the alternatives being considered for the proposed project located in Sacramento, California. The document describes why the project is being proposed, alternatives for the project, the existing environment that could be affected by the project, the potential impacts from each of the alternatives, and the proposed avoidance, minimization and/or mitigation measures.

What you should do:

- Please read this Draft EIS/EIR. Additional copies of this document, as well as the technical studies, are available for review at the following locations:

  City of Sacramento Development Services Department
  2101 Arena Boulevard, Second Floor
  Sacramento, CA 95834
  Attn: Grace Hovey, (916) 808-7601, ghovey@cityofsacramento.org or

  Sacramento Public Library
  828 I Street
  Sacramento, CA 95814

- Attend the public meeting on the project (date to be announced).

- We welcome your comments. If you have any comments regarding the proposed project, please attend the public meeting and/or send your written comments to the City of Sacramento (date to be announced).

- Submit comments via postal mail to:

  City of Sacramento Development Services Department
  2101 Arena Boulevard, Second Floor
  Sacramento, CA 95834
  Attn: Grace Hovey

What happens next:

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

For individuals with sensory disabilities, this document can be made available in Braille, large print, on audiocassette, or on computer disk. To obtain a copy in one of these alternate formats, please call or write to City of Sacramento Development Services Department, 1231 I Street, Room 300, Sacramento, CA 95814, Attn: Grace Hovey, (916) 808-7601, ghovey@cityofsacramento.org, or Lezley Buford, (916) 808-5935, lbuford@cityofsacramento.org

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EA 03-1C5200

Interstate 5/Cosumnes River Boulevard Interchange Project

DRAFT ENVIRONMENTAL IMPACT STATEMENT/ ENVIRONMENTAL IMPACT REPORT

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

U.S. DEPARTMENT OF TRANSPORTATION
Federal Highway Administration

THE STATE OF CALIFORNIA
Department of Transportation

THE CITY OF SACRAMENTO

2-7-06
Date of Approval

Director, Department of Transportation
City of Sacramento

24 January 2006
Date of Approval

Chief, Office of Environmental Services
California Department of Transportation, North Region

2/7/06
Date of Approval

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Abstract

The City of Sacramento, the California Department of Transportation, and the Federal Highway Administration are proposing to construct a new Cosumnes River Boulevard interchange on Interstate 5 in south Sacramento. In addition to the interchange, the project would extend Cosumnes River Boulevard from its current terminus at Franklin Boulevard west to the new interchange location and further west to Freeport Boulevard. The project is intended to provide an east-west connector between Interstate 5 and State Route 99 to improve mobility within the southerly limits of the City of Sacramento.

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List of Acronyms and Abbreviations

μ/m^3	micrograms per cubic meter
ac	acre
ACHP	Advisory Council on Historic Preservation
ADL	aerially deposited lead
APE	area of potential effect
ARB	California Air Resources Board
asl	above sea level
BA	biological assessment
basin plan	water quality control plan
BCI	Blackburn Consulting, Inc.
BLMB	Beach Lake Mitigation Bank
BMP	best management practice
CAA	Clean Air Act
CAFE	corporate average fuel economy
Cal OSHA	California Occupational Safety and Health Administration
Cal-EPPC	California Exotic Pest Plant Council
Caltrans	California Department of Transportation
CBSC	California Building Standards Code
CCR	California Code of Regulations
CDFA	California Department of Food and Agriculture
CDFG	California Department of Fish and Game
CDMG	California Division of Mines and Geology
CEC	California Energy Commission
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
CFG Code	California Fish and Game Code
CFR	Code of Federal Regulations
cfs	cubic feet per second
CGC	California Government Code
CGS	California Geological Survey
CIA	community impact assessment
City General Plan	City of Sacramento General Plan
City	City of Sacramento
cm	centimeters
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CO	carbon monoxide
Corps	U.S. Army Corps of Engineers
County General Plan	Sacramento County General Plan
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CT	Census tract
CWA	Clean Water Act
dB	decibel
dBA	a-weighted decibel
dbh	diameter at breast height
DOC	California Department of Conservation

DTSC	California Department of Toxic Substances Control
DWR	California Department of Water Resources
EBMUD	East Bay Municipal Utilities District
EIR	environmental impact report
EIS	environmental impact statement
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FCIR	farmland conversion impact rating
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FHWA	Federal Highway Administration
FIRM	flood insurance rate map
FMMP	Farmland Mapping and Monitoring Program
FPPA	Farmland Protection Policy Act
FR	Federal Register
ft	foot
ha	hectare
HASP	health and safety plan
HI	hazard index
HOV	high-occupancy vehicle
I-5	Interstate 5
in	inch
IS	initial study
ISAC	Invasive Species Advisory Committee
ISCST3	Industrial Source Complex Short Term
ISTEA	Intermodal Surface Transportation Efficiency Act of 1991
km	kilometer
km^2	square kilometers
kmpg	kilometer per gallon
kmph	kilometer per hour
KP	kilometer post
LAFCO	Local Agency Formation Commission
Ldn	day-night level
L_{eq}	equivalent sound level
L_{max}	maximum sound level
L_{min}	minimum sound level
LOS	level of service
L_{xx}	percentile-exceeded sound level
m	meter
mg/l	milligrams per liter
mi	mile
mi^2	square mile
MOU	memorandum of understanding
mpg	miles per gallon
mph	miles per hour
MTBA	Migratory Bird Treaty Act
MTBE	methyl tertiary butyl ether
MTIP	metropolitan transportation improvement plan

MTP	metropolitan transportation plan
Mw	maximum magnitude
NAC	noise abatement criteria
NAHC	Native American Heritage Commission
NCIC	North Central Information Center
NEPA	National Environmental Policy Act
NES	natural environment study
NESHAP	National Emissions Standard for Hazardous Air Pollutants
NFIP	National Flood Insurance Program
NHPA	National Historic Preservation Act
NISC	National Invasive Species Council
NOAA Fisheries	National Oceanic and Atmospheric Administration Fisheries Service
NOI	notice of intent
NO_X	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NPPA	Native Plant Protection Act
NRCS	Natural Resources Conservation Service
NRHP.	National Register of Historic Places
NWP	nationwide permit
O_3	ozone
OHWM	ordinary high-water mark
PCB	polychlorinated biphenyl
PDT	project development team
PG&E	Pacific Gas & Electric Company
PM10	particulate matter 10 microns or less in diameter
PM2.5	particulate matter 2.5 microns or less in diameter
ppm	parts per million
PRC	Public Resources Code
proposed action	I-5/Cosumnes River Boulevard interchange project
Protocol	Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction
RCRA	Resource Conservation and Recovery Act
RIS	relocation impact statement
ROG	reactive organic gases
RT	Sacramento Regional Transit District
RTP	Regional Transportation Plan
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Agreement
SACOG	Sacramento Area Council of Governments
SAFCA	Sacramento Area Flood Control Agency
SAMCC	Sacramento Archives and Museum Collection Center
SCDWR	Sacramento County Department of Water Resources
SCS	U.S. Soil Conservation Service
SIP	state implementation plan
SMAQMD	Sacramento Metropolitan Air Quality Management District
SR	State Route
SRCSD	Sacramento Regional County Sanitation District
SRWTP	Sacramento Regional Wastewater Treatment Plant
STIP	State Transportation Improvement Plan
Superfund	Comprehensive Environmental Response, Compensation, and Liability Act
SVAB	Sacramento Valley Air Basin
SWMP	Statewide Storm Water Management Plan

SWPPP	storm water pollution prevention plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
TMDL	total maximum daily load
UBC	Uniform Building Code
UPRR	Union Pacific Railroad
USA	Underground Service Alert
USC	U.S. Government Code
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VELB	valley elderberry longhorn beetle
VMT	vehicle miles traveled
WDR	waste discharge requirement
Williamson Act	California Land Conservation Act of 1965
WQO	water quality objective
XPI	extended phase I
yd	yard

List of Separately Bound Technical Studies

The following identifies the technical studies (bound separately) prepared for this project These documents are available for review during normal business hours by contacting:

Grace Hovey
City of Sacramento Development Services Department
Planning Division
1231 I Street, Room 300
Sacramento, CA 95814
916/808-7601
ghovey@cityofsacramento.org

Blackburn Consulting, Inc. 2001a. Cosumnes River Boulevard Interchange: preliminary geology and geotechnical report. Auburn, CA. Prepared for Mark Thomas & Company, Sacramento, CA.

Blackburn Consulting, Inc. 2001b. Draft initial site assessment report: Cosumnes River Boulevard Interchange, Sacramento County, California. Auburn, CA. Prepared for Mark Thomas & Company, Sacramento, CA.

Civil Solutions. 2002. Preliminary hydrology report and impacts analysis for the proposed Cosumnes River Boulevard extension and interchange. Sacramento, CA.

Mark Thomas & Company, Inc. 2001. Project study report (project development support): on Interstate 5 in the City of Sacramento, near the Stonecrest Overcrossing between Morrison Creek and Meadowview Road. Sacramento, CA. Prepared for California Department of Transportation, Special Funded Projects, Sacramento, CA.

Mark Thomas & Company, Inc. 2002b. Cosumnes River Boulevard extension and interchange at I-5: first geometric submittal—EA 1C520K. July 15, 2002. File 51005 A (34). Sacramento, CA. Prepared for California Department of Transportation, Special Funded Projects, Sacramento, CA.

Mark Thomas & Company, Inc. N.d. Draft Project Report. New Connection. Sacramento, CA.

Fehr & Peers Associates, Inc. 2003. Technical memorandum #1 on Interstate 5/Cosumnes River Boulevard Interchange Project. Roseville, CA.

Jones & Stokes. 2003a. Air quality technical report: Interstate 5/Cosumnes River Boulevard interchange. EA: 1C5200. December. (J&S 01-120.) Sacramento, CA. Prepared for Mark Thomas & Company, City of Sacramento Department of Public Works, and Office of Environmental Management, California Department of Transportation District 3, Sacramento, CA.

Jones & Stokes. 2003b. Archaeological survey report: Interstate 5/Cosumnes River Boulevard interchange. EA: 1C5200. December. (J&S 01-120.) Sacramento, CA. Prepared for Mark Thomas & Company, City of Sacramento Department of Public Works, and Office of Environmental Management, California Department of Transportation District 3, Sacramento, CA. Not available for public review due to confidential information.

Jones & Stokes. 2003c. Biological assessment: Interstate 5/Cosumnes River Boulevard Interchange Project. EA: 1C5200. December. (J&S 01-120.) Sacramento, CA. Prepared for Mark Thomas & Company, City of Sacramento Department of Public Works, and Office of Environmental Management, California Department of Transportation District 3, Sacramento, CA.

Jones & Stokes. 2003d. Community impact assessment and relocation impact statement: Interstate 5/Cosumnes River Boulevard Interchange Project. EA: 1C5200. March. (J&S 01-120.) Sacramento, CA. Prepared for Mark Thomas & Company, City of Sacramento Department of Public Works, and Office of Environmental Management, California Department of Transportation District 3, Sacramento, CA.

Jones & Stokes. 2003e. Extended phase I investigations: Interstate 5/Cosumnes River Boulevard Interchange Project. EA: 1C5200. December. (J&S 01-120.) Sacramento, CA. Prepared for Mark Thomas & Company, City of Sacramento Department of Public Works, and Office of Environmental Management, California Department of Transportation District 3, Sacramento, CA. Not available for public review due to confidential information.

Jones & Stokes. 2003f. Historic property survey report: Interstate 5/Cosumnes River Boulevard Interchange Project. EA: 1C5200. December. (J&S 01-120.) Sacramento, CA. Prepared for Mark Thomas & Company, City of Sacramento Department of Public Works, and Office of Environmental Management, California Department of Transportation District 3, Sacramento, CA. Not available for public review due to confidential information.

Jones & Stokes. 2003g. Natural environment study report: Interstate 5/Cosumnes River Boulevard Interchange Project. EA: 1C5200. November. (J&S 01-120.) Sacramento, CA. Prepared for Mark Thomas & Company, City of Sacramento Department of Public Works, and Office of Environmental Management, California Department of Transportation District 3, Sacramento, CA.

Jones & Stokes. 2003h. Noise study report: Interstate 5/Cosumnes River Boulevard Interchange Project. EA: 1C5200. December. (J&S 01-120.) Sacramento, CA. Prepared for Mark Thomas & Company, City of Sacramento Department of Public Works, and Office of Environmental Management, California Department of Transportation District 3, Sacramento, CA.

Jones & Stokes. 2003i. Preliminary delineation of waters of the Unites States, including wetlands: Interstate 5/Cosumnes River Boulevard Interchange Project. (J&S 01-120.) Sacramento, CA. Prepared for City of Sacramento Department of Public Works, CA, and Office of Environmental Management, California Department of Transportation District 3, Sacramento, CA.

Sikes, N. E., and K. J. Tremaine. 2002. Positive archaeotechnical survey report for the I-5/Cosumnes River Boulevard interchange and roadway extension, City of Sacramento, California. Draft. Dixon, CA: Tremaine & Associates, Inc. Prepared for Jones & Stokes, Sacramento, CA. Not available for public review due to confidential information.

Summary

S.1 Purpose of and Organization of this Report

This joint environmental impact statement/environmental impact report (EIS/EIR) is a public document that assesses the environmental effects of the proposed action, as required by the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA) and in compliance with the Council on Environmental Quality Guidelines (40 Code of Federal Regulations [CFR] 1500 to 1508), State CEQA Guidelines (14 California Code of Regulations [CCR] 14000 et seq.), and the U.S. Department of Transportation's Environmental Impact and Related Procedures (23 CFR 771).

Because the Federal Highway Administration (FHWA) could release federal funding for the proposed action, and is responsible for approving or denying actions associated with the interstate system, compliance with NEPA is required; FHWA is therefore the Federal lead agency under NEPA, with the California Department of Transportation (Caltrans) acting as liaison and providing oversight for the NEPA process. FHWA and Caltrans are overseeing the preparation of an EIS under NEPA for the proposed action because it has been determined that the whole of the proposed action may result in a significant effect on the quality of the human environment.

The City of Sacramento (City), the state lead agency under CEQA, must evaluate the environmental impacts of the proposed action when considering whether to approve the project. The City has determined that the appropriate level of CEQA environmental documentation is an EIR because the proposed action (project) may have a significant effect on the environment.

The organization of this EIS/EIR has been prepared to follow the format identified in Caltrans' Streamlined EIS/EIR Outline (California Department of Transportation 2003b) and the CEQA requirements of the City. One of the primary differences between NEPA and CEQA is the way significance is determined and later discussed in environmental documents. Under NEPA, significance is used to determine whether an EIS or lower level of documentation will be required. NEPA requires that an EIS is prepared when the proposed action as a whole has the potential to "significantly affect the quality of the human environment." This determination is based on context and intensity. Some impacts determined significant under CEQA might not be of sufficient magnitude to be determined significant under NEPA. Under NEPA, once a decision to complete an EIS is made, it is the magnitude of the impact that is evaluated, and no judgment of its significance is deemed important for the text. NEPA does not require that a determination of significant impacts be stated in the environmental documents. (California Department of Transportation 2003a.)

The NEPA and CEQA evaluations for this joint document are contained in separate chapters (Chapters 3 and 4, respectively). For the purpose of the impact discussions in this document, significance conclusions are provided in the context of CEQA only. These conclusions are presented in Chapter 4. Table S-1, located at the end of this chapter, presents a brief summary of

the impacts of the build alternatives under consideration and the mitigation measures associated with each impact. CEQA significance conclusions prior to mitigation and post mitigation are also identified.

The intent of the preparers of this joint document is to provide the readers with a clear description of the environmental analysis conducted for this proposed action within the framework of applicable regulations. This EIS/EIR serves as an informational document to be used in the local planning and decision-making process, and does not recommend approval or denial of the action. After the public circulation period, all substantive comments on environmental issues will be responded to in a final EIR/EIS and distributed to the public and agencies for consideration. After the final EIR/EIS is prepared, the FHWA and the City will make the final determination of the proposed action's effect on the environment.

This document is organized in the following chapters:

- The "Summary," provides a brief description of the proposed action and actions in the same geographic area, the alternatives considered, areas of known controversy, major environmental impacts, unresolved issues, benefits of the project, and other authorizations and approvals that may be required.
- Chapter 1, "Purpose of and Need for Project," presents an overview of the proposed action and a description of the project location, purpose and need, and background.
- Chapter 2, "Project Alternatives," presents a description of the alternative development process, including alternatives that were considered and withdrawn, and the alternatives to that are evaluated in this joint document.
- Chapter 3, "Affected Environment, Environmental Consequences, and Mitigation Measures," constitutes the NEPA evaluation for this proposed action. It covers the following environmental resources and issues. These resources and issues are discussed in sections 3.2 to 3.19 of this chapter, respectively.
  - Land use
  - Growth
  - Farmlands/agricultural lands
  - Community impacts
  - Utilities/emergency services
  - Traffic and transportation/pedestrian and bicycle facilities
  - Visual/aesthetics
  - Cultural resources
  - Hydrology and floodplains
  - Water quality and stormwater runoff
  - Geology/soil/seismic/paleontology/topography
  - Hazardous waste/materials
  - Air quality
  - Noise
  - Energy
  - Wetlands and other waters of the United States

- Vegetation
- Wildlife
- Threatened and endangered species

Each section discusses the affected environment for the resource topic (which also serves as the setting section for Chapter 4), NEPA environmental consequences associated with the proposed action and no-action alternative, and mitigation measures to avoid or reduce the environmental consequences.

- Chapter 4, "California Environmental Quality Act Evaluation," constitutes the CEQA evaluation for this project. It discusses the environmental impacts associated with the proposed action for the resource topics evaluated in Chapter 3, significance thresholds used to judge impacts under CEQA, and pre- and post-mitigation CEQA significance conclusions associated with each impact. The environmental setting for these topics and the methods used to assess impacts are described in Chapter 3.
- Chapter 5, "Cumulative Impacts," describes the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions.
- Chapter 6, "Summary of Public Involvement Process," summarizes the public involvement process undertaken for this proposed action.
- Chapter 7, "Mitigation and Monitoring Commitments, contains details on the mitigation and monitoring program for the proposed action.
- Chapter 8, "List of Preparers," lists the technical specialists who prepared this joint document.
- Chapter 9, "Distribution List," contains the distribution list for the EIS/EIR.
- Chapter 10, "References Cited," includes reference information for all sources and personal communications that were cited in preparation of this joint document.

This joint document also contains the following appendices:

- Appendix A, "CEQA Checklist."
- Appendix B, "Title VI Policy Statement."
- Appendix C, "Plant Species Encountered in the Project Area."
- Appendix D, "Wildlife Species Encountered in the Project Area."
- Appendix E, "Agency Correspondence and Public Involvement."

S.2 Brief Description of Proposed Action

The proposed action is located in the southwest quadrant of the City of Sacramento. The action would include extending Cosumnes River Boulevard from its current westerly terminus at Franklin Boulevard to an interchange at I-5, and then farther west to an at-grade intersection with

Freeport Boulevard in the currently unincorporated town of Freeport. As described in Chapter 2, "Project Alternatives," two build alternatives—Build Alternative A: Franklin to Freeport North Alignment (identified as the preferred alternative for programming purposes) and Build Alternative B: Franklin to Freeport South Alignment—are being considered, in addition to the No-Build Alternative.

The proposed action would accommodate future development of the project area both west and east of I-5. For purposes of the environmental analysis, it has been assumed that this land would develop in accordance with the land uses adopted in the City of Sacramento General Plan. Figure S-1, "Vicinity Map," identifies the location of the proposed action within the Sacramento County vicinity. Figure S-2, "Location Map," shows the location in more detail within southwest City of Sacramento. Figure S-3, "Topographic Map," provides a topographic map of the project area. Additional figures contained in Chapter 2 of this document provide graphical representations of the interchange design, Morrison Creek/Union Pacific Railroad (UPRR) crossing, and other project features.

S.2.1 Interchange Configuration

The proposed interchange is a Type L-9 partial cloverleaf design that includes the following components and design features (see Figure 2-1, "Project Alternatives, Figure 2-2, "Interchange Design and Phasing," and Figure 2-4a, "Design Details," in Chapter 2, "Project Description").

Overcrossing Structure

The I-5 overcrossing structure would be four lanes with turn lanes provided at the on-ramps and would be located at approximately the same location as the existing Stonecrest Avenue overcrossing (referred to in Caltrans documents as the "Riverbend Overcrossing"). The existing structure would be removed.

Off-Ramps

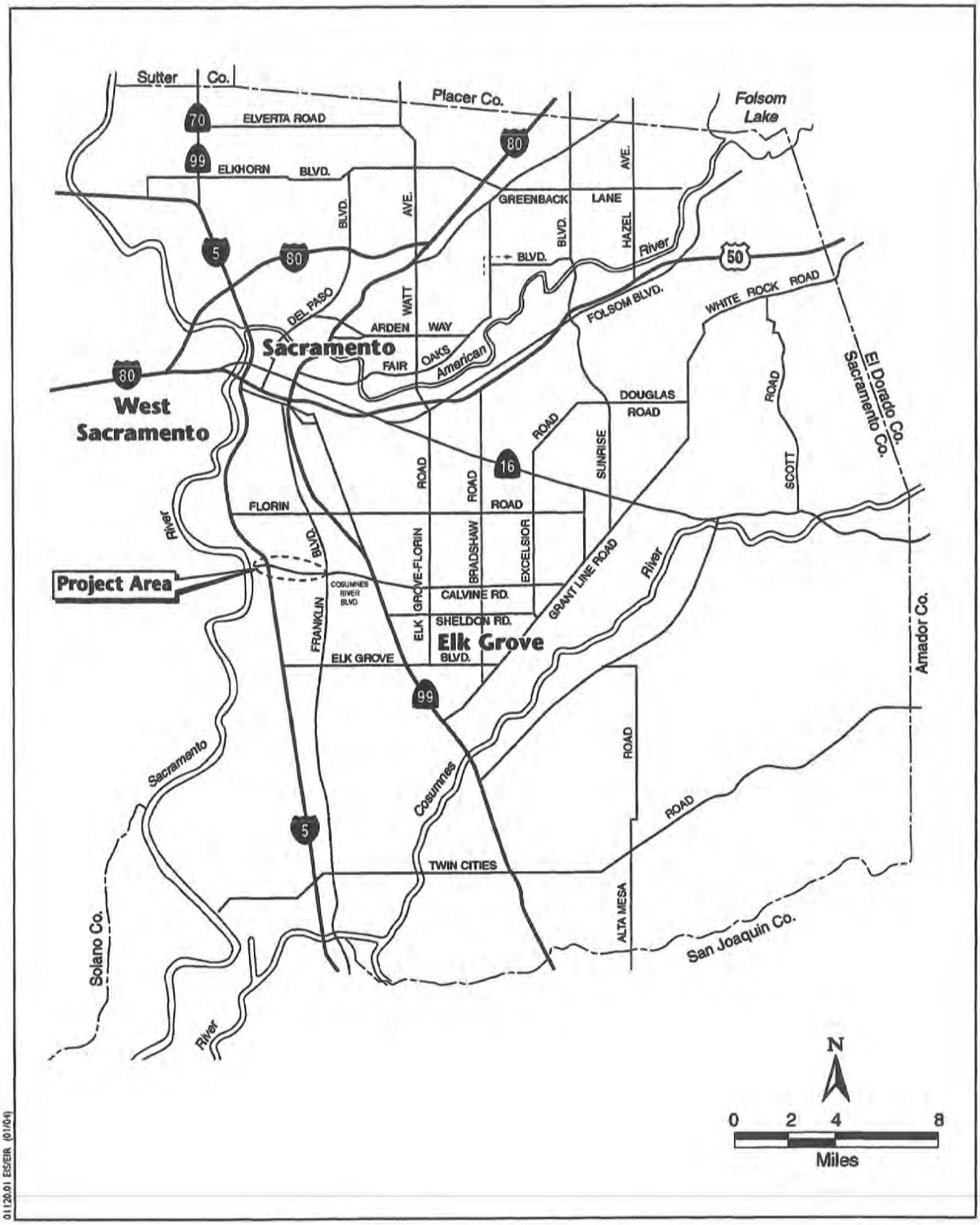
There would be two-lane diagonal off-ramps from I-5 in each direction. Each off-ramp would have a 400-meter (m) (1,300 foot [ft]) deceleration lane. The ramp termini intersections would be signalized.

On-Ramps

Two loop on-ramps to I-5 are proposed with provisions for ramp metering for southbound and northbound movements. Both on-ramps would be two lanes with one of the lanes being a high-occupancy vehicle (HOV) bypass lane. Two diagonal on-ramps to I-5 are proposed with ramp metering for southbound and northbound movements. The northbound ramp would consist of two mixed-flow lanes and one HOV bypass lane. The southbound ramp would consist of one mixed-flow lane and one HOV bypass lane. Acceleration lanes would be provided for these ramps.

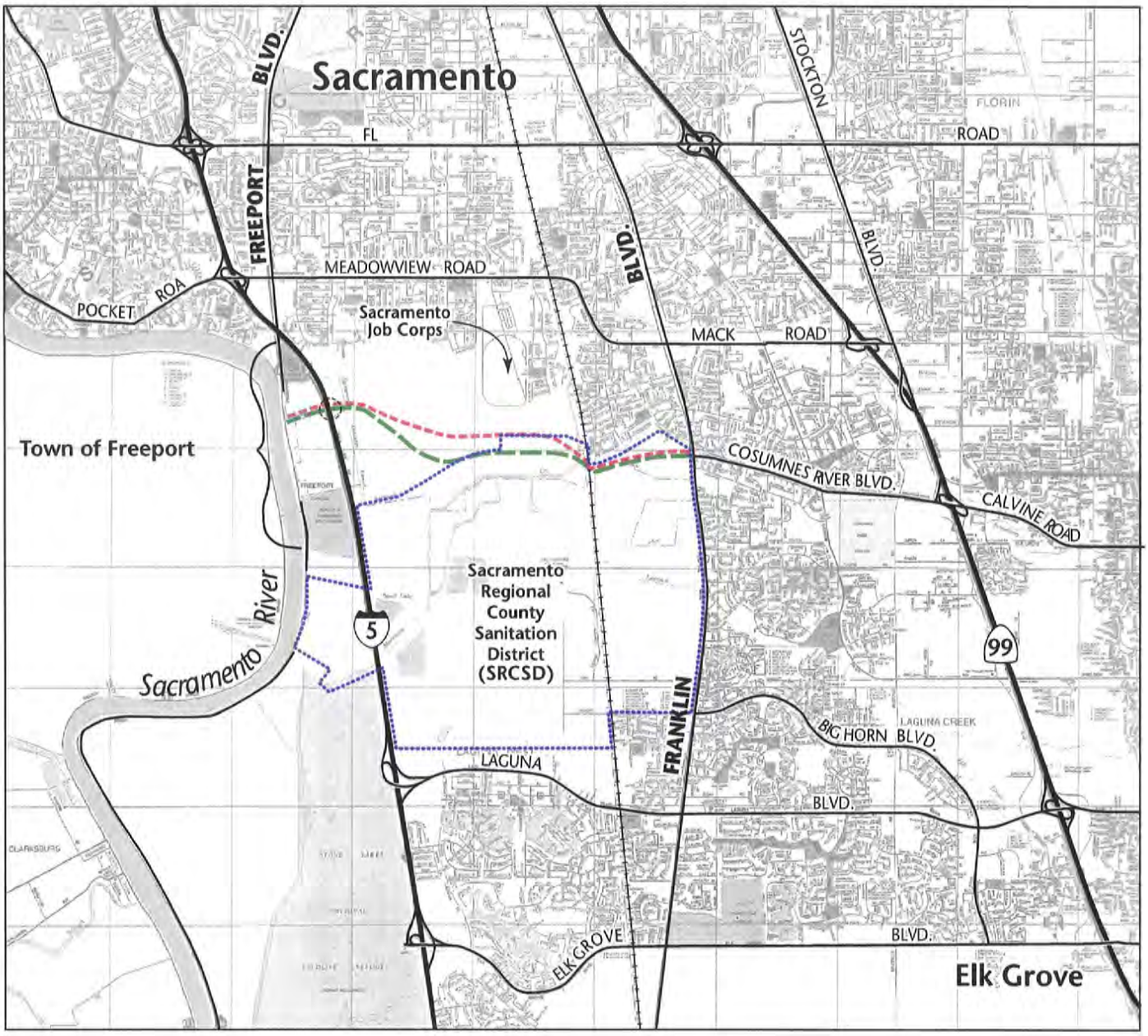
Bicycle and Pedestrian Movements

The "standard" Type L-9 partial cloverleaf configuration has been modified to slow vehicular traffic at potential conflict points, thereby allowing for safer crossings by pedestrians and bicyclists (see Figure 2-2 in Chapter 2, "Project Description"). The entrances to the loop on-ramps would be perpendicular to the local cross street. The entrances to the diagonal on-ramps



01120.01 EIS/EIR (01/04)

Figure S-1
Vicinity Map
I-5/Cosumnes River Boulevard Interchange Project



Legend

- Alternative A: North Alignment (Preferred)
- Alternative B: South Alignment
- Proposed Interchange Location
- Sacramento Regional County Sanitation District (SRCSD) Boundary

N

0 4,000 Feet

Figure S-2
Location Map
I-5/Cosumnes River Boulevard Interchange Project

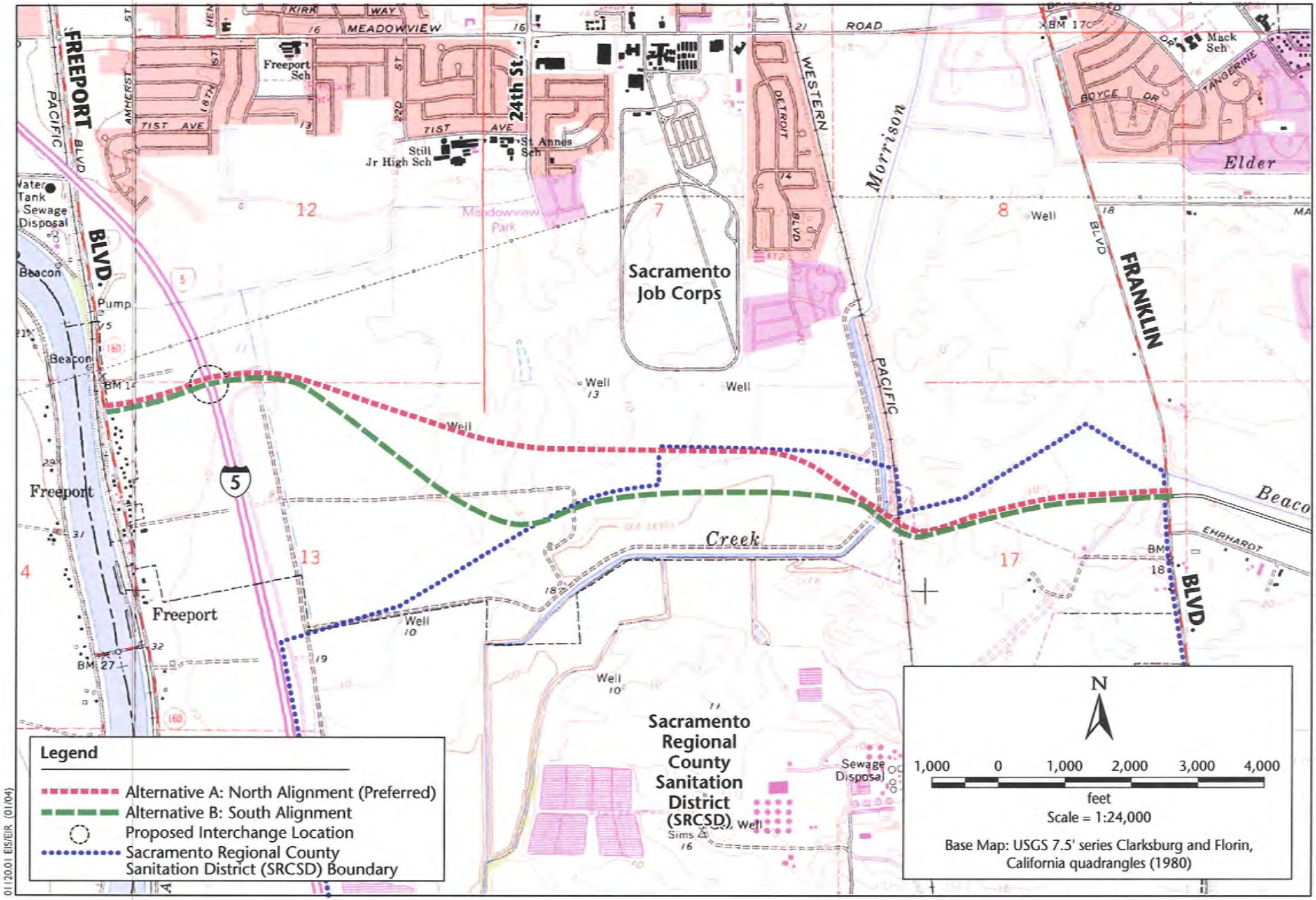


Figure S-3
Topographic Map
I-5/Cosumnes River Boulevard Interchange Project

would be located at the ramp intersection. At the loop and diagonal on-ramp entrances, a separate right-turn/deceleration lane would be provided as needed, with appropriate curb return radii to maintain Surface Transportation Assistance Act (STAA) movements. Pedestrian crossing movements at the diagonal on-ramp would be signalized.

S.2.2 Freeport Boulevard Intersection

The design for both build alternatives includes a "T" connection to Freeport Boulevard, located approximately 400 m (1,300 ft) west of the southbound off-ramp of the proposed interchange. Because of concerns about potential impacts on the community of Freeport, the lane configuration at the Freeport Boulevard intersection was reviewed in detail with the intent of minimizing capacity enhancements on Freeport Boulevard. The design provides the following: northbound Freeport Boulevard would have a single through lane and a dedicated right-turn lane (northbound to eastbound), southbound Freeport Boulevard would have a combined left-turn/through lane and single dedicated left-turn lane (southbound to eastbound), and Cosumnes River Boulevard would have two eastbound receiving lanes and single dedicated lanes for left turns (southbound) and right turns (northbound).

S.2.3 Franklin Boulevard Intersection

The design for both build alternatives includes constructing the west leg of the existing Cosumnes Boulevard/Franklin Road intersection to conform to a planned future City project to reconstruct the intersection. Based on the numbers identified in the traffic study for the project, it was determined that the eastbound Cosumnes River Boulevard would have two dedicated left-turn lanes (eastbound to northbound), two through lanes, and a dedicated right-turn lane (eastbound to southbound). These improvements anticipate matching the planned future project to reconstruct the intersection as follows.

- Northbound Franklin Boulevard would be modified to provide two dedicated left-turn lanes (northbound to westbound), two through lanes, plus a dedicated right-turn lane (northbound to eastbound).
- Southbound Franklin Boulevard would be modified to provide a dedicated right-turn lane (southbound to westbound), two through lanes, and two dedicated left-turn lanes (southbound to eastbound).
- Westbound Cosumnes River Boulevard would be modified to provide two through lanes, two dedicated left-turn lanes (westbound to southbound), plus one dedicated right-turn lane.

S.2.4 Roadway Width

Based on traffic forecasts, the extension of Cosumnes River Boulevard is designed to be four lanes between Franklin Boulevard and 24th Street, six lanes between 24th Street and I-5, and four lanes between I-5 and Freeport Boulevard. The road would include curb, gutter, and sidewalk in both directions on the developable portion of the project corridor; however, once the road is on the land owned by the Sacramento Regional County Sanitation District (SRCSD), the sidewalk would be eliminated on the south side of the road and would continue only on the north side of the road to cross Morrison Creek and the railroad tracks.

S.2.5 Bicycle and Pedestrian Movements

The preliminary design of Cosumnes River Boulevard incorporates the following pedestrian and bicycle features:

- Both sides of the road would include 6-foot-wide separated sidewalks between I-5 and 24th Street.
- Only the north side of the road would include a 6-foot-wide separated sidewalk between 24th Street and Franklin Boulevard; the areas where the road is located on or adjacent to Bufferlands property would be fenced at the request of Bufferlands staff to discourage unauthorized access into this area.
- The Morrison Creek/UPRR bridge would include a combined pedestrian/bicycle pathway on the north side of the structure. The design of this pathway is being coordinated with a future City project to provide a bicycle path along Morrison Creek.

S.2.6 Morrison Creek Bridge and Union Pacific Railroad Line Crossing

To avoid an at-grade crossing of the UPRR line, a grade separation/overhead structure is required. The alignment and profile have been designed to accommodate the Sacramento Regional Transit District's (RT's) proposed future light rail extension. The structure would also span Morrison Creek and the railroad line. A single structure would be constructed to span the creek and the railroad line. The structure would be constructed on columns—preliminary design indicates that the structure would require six pier lines, each with four 1.7-m-diameter (5.5-ft-diameter) columns for support. The structure would be elevated over 30 feet above adjacent grade where it crosses the creek and railroad line. Some dewatering of Morrison Creek may be required for construction. All areas between Morrison Creek and railroad line would be restored as part of the proposed action.

S.3 Description of Actions in the Same Geographic Area as the Proposed Action

The following projects are also located in the I-5/Cosumnes River Boulevard project area.

S.3.1 Delta Shores Property

Approximately 283.3 to 323.7 hectares (ha) (700 to 800 acres [ac]) of vacant agricultural land is located on both sides of I-5. The City approved a mixed-use development called the Delta Shores Project for this land in the 1980s, but the land has not been developed. There is no current specific development proposal for the land at this time although tentative development scenarios have been discussed with the City.

S.3.2 Stone Family Trust Property

Approximately 32.4 ha (80 ac) of vacant agricultural land is located east of I-5 and east of the Delta Shores property. There is no specific development proposal for the land at this time although tentative development scenarios have been discussed with the City.

S.3.3 Sacramento Regional Transit District South Line Extension

The Sacramento Regional Transit District (RT) is proposing a 17.7-km (11-mi) extension of its light rail system from downtown Sacramento to Elk Grove in two phases. The first phase has been constructed. The second phase, a segment of which is located is within the I-5/Cosumnes River Boulevard project area, would extend light rail from Meadowview Road to the vicinity of Calvine/Auberry Roads. The project includes a new Morrison Creek Station planned between the existing Meadowview Station and the planned Franklin Road Station. Environmental review and preliminary engineering for the second phase is ongoing and anticipated to be completed in 2006. Additional information on this project can be obtained at www.slp2.org. *State Clearinghouse Number: 2002032088*

S.3.4 Sacramento Regional County Sanitation District Lower Northwest Interceptor Project

The Sacramento Regional County Sanitation District (SRCSD) is constructing a 27.4-km-long (17-mi-long) wastewater interceptor between the Natomas area in north Sacramento and the Sacramento Regional Wastewater Treatment Plant (SRWTP) just south of the I-5/Cosumnes River Boulevard project area. The interceptor alignment runs through West Sacramento and includes two Sacramento River crossings. SRCSD certified an environmental impact report (EIR) in 2003 (Sacramento County 2003). Construction of the project began in 2004 and is anticipated to be complete in 2006. When it approved the interceptor project, SRCSD decided to construct the interceptor along the proposed north alignment of the Cosumnes Boulevard extension. Additional information on this project can be obtained at www.srcsd.com. *State Clearinghouse Number: 2001112085.*

S.3.5 Freeport Regional Water Project

The Freeport Regional Water Project is a joint water project being developed by Sacramento County and East Bay Municipal Utilities District, in close coordination with the City of Sacramento and the U.S. Bureau of Reclamation. The goal of the Freeport Regional Water Project is to address the drinking water needs of the Sacramento County Water Agency and the East Bay Municipal Utilities District. The proposed project would construct and operate a water supply project to meet regional water needs. Major facilities include a new water intake structure on the Sacramento River near Freeport, a raw water pipeline in Sacramento and San Joaquin Counties, a new water treatment plant in central Sacramento County, a new pumping plant near the existing terminus of Folsom South Canal, and a new pumping and treatment facility at the Mokelumne Aqueduct in San Joaquin County. The final EIR for the project was certified by the Freeport Regional Water Authority in April 2004. The final EIS for the project was released in April 2004, and in January 2005 the U.S. Bureau of Reclamation issued the Record of Decision. The Freeport Regional Water Authority and the U.S. Bureau of Reclamation chose Alternative 5 as the preferred pipeline alignment. The preferred alternative follows the proposed north alignment of the I-5/Cosumnes River Boulevard roadway extension. The project schedule anticipates engineering and permitting work to be completed by spring 2006; construction on the project is anticipated to be complete by 2010. Additional information on this project can be found at www.freeportproject.org. *State Clearinghouse Number: 2002032132.*

S.3.6 South Sacramento Streams Project

The Sacramento Area Flood Control Agency (SAFCA), State Reclamation Board, and the U.S. Army Corps of Engineers (Corps) have jointly proposed to construct flood improvements on select stream reaches within the Morrison Creek stream group, located in south Sacramento County. The specific streams included in the project are Morrison Creek, Florin Creek, Elder Creek, and Unionhouse Creek. The objective of the flood protection improvements is to implement the design modifications needed to achieve minimum Federal Emergency Management Agency (FEMA) certifiable 100-year level of flood protection as identified by the joint study of flood protection needs. Flood protection would be accomplished by excavating the selected stream channels, retrofitting stream passage beneath several local bridge crossings, installing floodwalls at select locations, realigning portions of existing levees, and installing box culverts at several stream crossings. This project has been approved by SAFCA and the Corps. The project includes constructing additional levees and/or raising existing levees on the northern boundary of the SRWTP. Additional information on this project can be found at www.safca.org. (Kreinberg pers. comm.) *State Clearinghouse Number: 1997102056*

S.3.7 Sacramento Regional County Sanitation District Bufferlands Habitat Enhancement Project

The SRCSD Bufferlands staff has been working with SAFCA to develop a combined flood control, recreation, and habitat enhancement and restoration project as part of the South Sacramento Streams Project. The enhancement project would enhance and restore habitat on approximately 161.9 ha (400 ac) of the SRCSD Bufferlands, including a small area (less than 0.4 ha [1 ac]) of annual grassland within the I-5/Cosumnes River Boulevard project area. Habitat enhancement in this area would consist of plantings with herbaceous vegetation and native grasses suitable for upland habitat. (Young pers. comm.)

S.4 Summary of All Reasonable Alternatives Considered

Two build alternatives are analyzed in an equal level of detail in this EIS/EIR and are summarized below.

S.4.1 The "Build" Alternatives

Build Alternative A, the preferred alternative for programming purposes, is to construct Cosumnes River Boulevard from Franklin Boulevard west to Freeport Boulevard and construct an interchange at I-5. Just west of the Morrison Creek Bridge, the Cosumnes River Boulevard alignment would travel north and then west until reaching the interchange location.

Build Alternative B is also to construct Cosumnes River Boulevard from Franklin Boulevard west to Freeport Boulevard and construct an interchange at I-5. Just west of Morrison Creek, the alignment travels west through the Bufferlands adjacent to Morrison Creek. It then enters the southern portion of the Delta Shores parcel and travels northwest to the interchange location.

Build Alternative A has been identified as the preferred alternative for programming purposes because it would avoid bisecting the SRCSD Bufferlands property, has the support of the local

landowners, and parallels the Lower Northwest Interceptor alignment and the Freeport Regional Water Project, thereby reducing right-of-way requirements for roads and utilities.

As shown in Tables S-2 and S-3, traffic volumes would decrease on Pocket Road, Meadowview Road, Mack Road, and Franklin Boulevard with either Build Alternative A or B and the level of service (LOS) would improve from unacceptable (LOS D, E, or F) to acceptable operations (LOS C or better) on five segments. Both alternatives would cause a redistribution of study-area traffic that would increase daily traffic volumes on Cosumnes River Boulevard between Center Parkway and Bruceville Road, peak hour traffic volumes on critical turn movements at the Center Parkway/Cosumnes River Boulevard intersection, and peak hour traffic volumes on critical turn movements at the southbound SR 99 Ramps/Cosumnes River Boulevard intersection. In addition, the connection to Freeport Boulevard would reduce travel times (and trip lengths) for many trips with origins and destinations along Freeport Boulevard.

S.5 Summary of Major Environmental Impacts

Table S-1 (located at the end of this chapter) summarizes the environmental impacts associated with the build alternatives and identifies mitigation measures for the various impacts. This table also presents the premitigation and postmitigation significance conclusions associated with the project alternatives under the California Environmental Quality Act (CEQA).

Under CEQA, the following terms denote the significance of environmental impacts:

- A *less-than-significant impact* (LTS) would cause no substantial adverse effect on the environment and would not require mitigation
- A *significant impact* (S) would cause a substantial adverse effect on the environment
- A *significant and unavoidable impact* (SU) is one that would cause a substantial adverse effect on the environment and for which no mitigation is available to reduce the impact to a less-than-significant level.

Table S-2. Study Area Roadway Segment Operations – 2005 Conditions Without- and With-Project Conditions

Roadway	Segment	Lanes	No Build Alternative			Build Alternatives A and B		
			Daily Volume	V/C Ratio	LOS	Daily Volume	V/C Ratio	LOS
Pocket Road	Greenhaven Drive to I-5	4	24,100	0.67	B	24,100	0.67	B
	I-5 to Freeport Boulevard	4	30,700	***0.85***	***D***	22,800	0.63	B
Meadowview Road	Freeport Boulevard to 24th Street	4	26,500	0.74	C	24,400	0.68	B
	24th Street to Brookfield Drive	4	30,400	***0.84***	***D***	26,500	0.74	C
Mack Road	Brookfield Drive to Franklin Boulevard	4	28,400	0.79	C	26,200	0.73	C
	Franklin Boulevard to Center Parkway	4	26,400	0.73	C	25,100	0.70	B
Franklin Boulevard	Mack Road to Cosumnes River Boulevard	4	31,300	***0.87***	***D***	29,000	***0.81***	***D***
Cosumnes River Boulevard	Freeport Boulevard to I-5	4	-	-	-	13,300	0.33	A
	I-5 to 24th Street	6	-	-	-	9,500	0.16	A
	24th Street to Franklin Boulevard	4	-	-	-	9,400	0.24	A
	Franklin Boulevard to Center Parkway	2	12,000	0.60	B	15,000	0.75	C
	Center Parkway to Bruceville Road	2	16,600	***0.83***	***D***	17,600	***0.88***	***D***
	Bruceville Road to SR 99	6	34,200	0.57	A	34,900	0.58	A
Freeport Boulevard/ SR-160	Meadowview Road to Cosumnes River Boulevard	2	9,600	0.48	A	7,500	0.38	A
	Cosumnes River Boulevard to Freeport Bridge	2	4,700	0.26	A	4,900	0.27	A
	South of Freeport Bridge	2	2,300	0.13	A	2,200	0.12	A
Freeport Bridge	South River Road to SR 160	2	3,500	0.19	A	3,700	0.21	A

Source: Fehr & Peers 2005.

Note: Text in ***bold italics*** and inside box indicates unacceptable levels of service. Cosumnes River Boulevard and Freeport Boulevard from Meadowview Road to Cosumnes River Boulevard have high access control. All other roadways are assumed to have moderate access control.

Table S-3. Study Area Roadway Segment Operations – 2025 Without- and With-Project Conditions

Roadway	Segment	Lanes	No Build Alternative			Build Alternatives A and B		
			Daily Volume	V/C Ratio	LOS	Daily Volume	V/C Ratio	LOS
Pocket Road	Greenhaven Drive to I-5	4	26,500	0.74	C	27,800	0.77	C
	I-5 to Freeport Boulevard	4	44,900	***1.25***	***F***	23,000	0.64	B
Meadowview Road	Freeport Boulevard to 24th Street	4	38,000	***1.06***	***F***	27,400	0.76	C
	24th Street to Brookfield Drive	4	45,400	***1.26***	***F***	34,600	***0.96***	***E***
Mack Road	Brookfield Drive to Franklin Boulevard	4	35,700	***0.99***	***E***	28,600	0.79	C
	Franklin Boulevard to Center Parkway	4	29,400	***0.82***	***D***	28,000	0.78	C
Franklin Boulevard	Mack Road to Cosumnes River Boulevard	4	43,400	***1.21***	***F***	38,500	***1.07***	***F***
Cosumnes River Boulevard	Freeport Boulevard to I-5	4	–	–	–	24,100	0.60	B
	I-5 to 24th Street	6	–	–	–	29,200	0.49	A
	24th Street to Franklin Boulevard	4	–	–	–	27,300	0.68	B
	Franklin Boulevard to Center Parkway	4	24,700	0.62	B	35,700	***0.89***	***D***
	Center Parkway to Bruceville Road	4	32,100	***0.80***	***D***	38,000	***0.95***	***E***
	Bruceville Road to SR-99	6	54,300	***0.91***	***E***	58,800	***0.98***	***E***
Freeport Boulevard	Meadowview Road to Cosumnes River Boulevard	2	18,400	***0.92***	***E***	14,400	0.72	C
	Cosumnes River Boulevard to Freeport Bridge	2	7,100	0.39	A	9,400	0.52	A
	South of Freeport Bridge	2	3,500	0.19	A	3,300	0.18	A
Freeport Bridge	South River Road to SR-160	2	5,100	0.28	A	7,200	0.40	A

Source: Fehr & Peers 2005.

Note: Text in ***bold italics*** and inside box indicates unacceptable levels of service. Cosumnes River Boulevard has high access control. All other roadways are assumed to have moderate access control.

S.6 Areas of Known Controversy, Including Issues Raised by Agencies and the Public

At the time this document went to publication, there were no areas of known controversy associated with the proposed project.

S.7 Unresolved Issues

The only major unresolved issue identified at the time this document went to publication is what alternative will ultimately be selected. Build Alternative A (North Alignment) has been identified as the preferred alignment for programming purposes because of the following reasons:

- The north alignment has the support of the SRCSD Bufferlands staff, who prefer the north alignment over the south alignment because the south alignment bisects agricultural land under Bufferlands management. The south alignment would make it more difficult to continue agricultural operations on this area of the Bufferlands.
- The north alignment has been identified as the logical alignment for the installation of various utilities, including the Lower Northwest Interceptor and the Freeport Regional Water Project pipeline. Constructing the road along the northern alignment would be more land efficient than constructing the utilities along the northern alignment and constructing the road along the southern alignment.
- The north alignment has the support of the local landowners who prefer the north alignment over the south alignment because it provides better access to private property.

S.8 Benefits of the Project

The proposed project is consistent with the City of Sacramento General Plan and the Airport-Meadowview Community Plan. The project would provide the necessary transportation infrastructure to complete planned development while maintaining acceptable levels of service on city roadways.

The proposed project is also consistent with the Bufferlands Master Plan. Although the build alternatives would introduce a roadway into the northern portion of the Bufferlands and would require approximately 6.7 ha (16.3 ac) of land, the land on both sides of the roadway would continue to act as a buffer for the SRWTP and would not constrain operation of the SRWTP. As stated above, Build Alternative A is considered superior to Build Alternative B by the Bufferlands staff, and the design of the project has been closely coordinated with the Bufferlands staff. SRCSD's commitment to this road corridor preceded the development of the Bufferlands Master Plan.

The proposed action is identified in the Metropolitan Transportation Plan (MTP) as Sacramento Area Council of Governments' project "SAC18380: Extend Cosumnes River Boulevard from Franklin to Freeport with an interchange at I-5."

Both Build Alternatives would create a new regional connection between Franklin Boulevard and Freeport Boulevard that would include provisions for pedestrian and bicycle facilities where none exist today. The extension of Cosumnes River Boulevard between Franklin Boulevard and 24th Street and between I-5 and Freeport Boulevard would include sidewalks and a 6-foot-wide Class II bike lane on the north side of the road. Sidewalks and right-of-way would be provided for bicycle facilities (on- or off-street) between 24th Street and I-5. Consistent with current Caltrans design standards, the interchange at I-5 would include pedestrian sidewalks (with crosswalks at ramp intersections), a 8-foot-wide striped shoulders for bicycle use, and short radius on-ramp entrances to control vehicle entrance speed to provide a safer crossing for pedestrians and cyclists.

The new regional connection between Franklin Boulevard and Freeport Boulevard would also provide opportunities for new transit routes. The extension of Cosumnes River Boulevard between Franklin Boulevard and the UPRR overhead would accommodate (i.e., not preclude) the proposed extension of RT's light-rail transit system to Calvine Road at Auberry Drive as a double-track facility.

Finally, both Build Alternatives would provide additional capacity; analysis indicates that there will be an increase in total daily east/west travel (measured on Cosumnes River Boulevard and Meadowview Road) by approximately 50 percent. The increase in vehicle trips occurring from a roadway capacity improvement is commonly referred to as induced travel. Induced travel can occur as a result of vehicle trips diverting from other routes or shifting from off-peak to peak hour travel due to improved travel times. To measure the potential effects of induced travel resulting from implementation of the Build Alternatives, the change in total vehicle travel (time and distance) was measured at the local area, subregional, and regional level. The Build Alternatives provide a more direct route to I-5 (i.e., from Franklin Boulevard), providing substantial reduction in miles traveled and travel times. Compared to no-project conditions, the Build Alternatives would reduce total vehicle travel (time and distance), even considering the effect of "induced travel".

S.9 List of Other Authorizations and Approvals That May Be Required for the Proposed Action

Affected Agency	Approval, Permit, or Coordination Required	Status
City of Sacramento (State Lead Agency)	• Certification of environmental impact report for California Environmental Quality Act compliance • Authorization of funding, approval of proposed action from City Council • Encroachment permit from Department of Transportation for work within City right-of-way • Determination of conformity with City of Sacramento General Plan • Tree removal permit or approval • Special-use permit for nighttime construction at the interchange location	Ongoing
Caltrans	• Approves encroachment permit	Application for permit after final environmental document approved
Federal Highway Administration	• Approves Concept Approval Report	Ongoing
Sacramento County	• Tree removal permit or approval	Application for permits anticipated after final environmental document approved
State Office of Historic Preservation	• Consultation under National Historic Preservation Act Section 106	Consultation complete; see appendices
U.S. Army Corps of Engineers (Corps)	• CWA Section 404 permit, Nationwide Permit 14 (Road Crossings) and possibly Nationwide Permit 33 (Temporary Construction Access and Dewatering)	Application for permit(s) anticipated after final environmental document approved
U.S. Fish and Wildlife Service (USFWS)	• A Biological Opinion from USFWS under federal Endangered Species Act Section 7 for effects on vernal pool fairy shrimp, vernal pool tadpole shrimp, valley elderberry longhorn beetle, and giant garter snake	Consultation complete; see appendices
California Department of Fish and Game (DFG)	• Streambed Alteration Agreement under California Fish and Game Code Section 1602 • A consistency finding on the USFWS Biological Opinion • A California Fish and Game Code Section 2081 letter of concurrence permit from DFG for the loss of special-status species habitat	Application for permit anticipated after final environmental document approved
California Public Utilities Commission (CPUC)	• Authority to construct a new public railroad-highway crossing	Consultation initiated through submittal of draft environmental document; application anticipated after final environmental document is approved
Reclamation Board	• Encroachment permit for activities conducted within Reclamation Board's right-of-way	Consultation initiated through submittal of draft environmental document; application anticipated after final environmental document is approved
Central Valley Regional Water Quality Control Board	• General construction activity stormwater discharge permit, notice of intent for grading activities exceeding 1 acre • CWA Section 401 water quality certification on the CWA Section 404 permit • CWA Section 402 National Pollutant Discharge Elimination System permit	Consultation initiated through submittal of draft environmental document; application anticipated after final environmental document is approved

Affected Agency	Approval, Permit, or Coordination Required	Status
Sacramento Metropolitan Air Quality Management District	• Permit to operate construction equipment	Consultation initiated; application for permit anticipated after project is approved
Sacramento Regional Transit District	• Coordination of design issues	Ongoing
Sacramento Regional County Sanitation District (SRCSD)	• Coordination of right-of-way and design issues • Approval to construct the project across the Bufferlands, including location and possible tree removal	Ongoing coordination
Sacramento Area Flood Control Agency	• Coordination of design issues	Ongoing coordination
California Transportation Commission	• Approval of a new connection to I-5	Application for new connection anticipated after project is approved

Based on information obtained during preparation of this environmental document, it does not appear that the following agency will be involved in the review and permitting of the project:

- National Marine Fisheries Service – no anadromous fish are located in Morrison Creek or would be affected by the proposed action.

Table S-1. Summary of Impacts and Mitigation Measures for the Build Alternatives

Impact	CEQA Mitigation	CEQA Level of Significance	CEQA Mitigated Level of Significance
Land Use and Planning			
AG-1: Inconsistency with City and County Agriculture Goals and Policies	None required	LTS	LTS
AG-2: Direct Conversion of Farmland to Nonagricultural Uses	None required	LTS	LTS
AG-3: Indirect Conversion of Farmland to Nonagricultural Uses	None required	LTS	LTS
AG-4: Cumulative Conversion of Vacant/Agricultural Land to Urban Uses	None available	PS	SU
Population and Housing			
G-1: Induce Growth in Sacramento, Freeport, or Unincorporated Sacramento County	None required	LTS	LTS
C/R-1: Displacement of Existing Businesses or Housing	None required	N	N
C/R-2: Creation of Temporary Jobs During Construction	None required	LTS	LTS
C/N-1: Physical or Psychological Division of a Community	None required	LTS	LTS
C/N-2: Alter the Community Character of the Freeport Community	None required	LTS	LTS
Geologic Problems			
GEO-1: Potential Structural Damage and Injury from Fault Rupture	None required	N	N
GEO-2: Potential Structural Damage and Injury from Ground Shaking	None required	LTS	LTS
GEO-3: Potential Structural Damage and Injury from Liquefaction and Related Hazards	None required	LTS	LTS
GEO-4: Potential Accelerated Erosion from Grading Activities	None required	N	N
GEO-5: Settlement of Bridge Approach Fill Material	None required	LTS	LTS
GEO-6: Potential Scour at Bridge Supports	None required	LTS	LTS
GEO-7: Corrosion of Concrete and Steel Structural Component	None required	LTS	LTS
GEO-8: Damage to Structural Components from Expansive Soils	None required	LTS	LTS
GEO-9: Cumulative Increased Sedimentation of Receiving Waters	None required	LTS	LTS
Water			
HYD-1: Increases in the Volume of Surface Runoff during Operation	MM HYD-1: Prepare and Implement a Drainage Plan for the Project	PS	LTS
HYD-2: Changes in Drainage Patterns during Construction	None required	LTS	LTS
HYD-3: Changes in Drainage Patterns during Operation	None required	LTS	LTS
HYD-4: Changes in Groundwater Quantity during Construction	MM HYD-2: Return Groundwater-Related Dewatering Effluent to Aquifer	PS	LTS
HYD-5: Changes in Groundwater Quantity during Operation	None required	LTS	LTS
HYD-6: Cumulative Regional Increases in Runoff and Potential Flooding Hazards	MM HYD-1: Prepare and Implement a Drainage Plan for the Project	PS	LTS
WQ-1: Erosion and Sedimentation during Construction	None required	LTS	LTS
WQ-2: Releases of Hazardous Materials during Construction	MM WQ-1: Implement Measures to Maintain Groundwater Quality	PS	LTS
WQ-3: Degradation of Water Quality from Dewatering during Construction	None required	LTS	LTS

Table S-1. Continued

Impact	CEQA Mitigation	CEQA Level of Significance	CEQA Mitigated Level of Significance
WQ-4: Degradation of Surface Water Quality during Operation	MM WQ-2: Incorporate Source Treatment Controls into Design (project falls into greater or equal to 5 acres road surface category)	PS	LTS
WQ-5: Operational Phase Degradation of Groundwater Quality	None required	N	N
Air Quality			
AQ-1: Direct Temporary Increase in Construction-Related Emissions	None available	PS	SU
AQ-2: Direct Permanent Increase in Local CO Concentrations at Nearby Intersections	None required	LTS	LTS
AQ-3: Direct Temporary Increased Health Risk Resulting from Exposure to Diesel Exhaust from Construction Activities	None required	LTS	LTS
AQ-4: Cumulative Increase in Construction-Related Emissions	None available	PS	SU
Transportation/Circulation			
TR-1: Improved Level of Service on Pocket Road between I-5 and Freeport Boulevard	None required	LTS	LTS
TR-2: Improved Level of Service on Meadowview Road between 24th Street and Brookfield Drive	None required	LTS	LTS
TR-3: Improved Operations on Franklin Boulevard between Mack Road and Cosumnes River Boulevard	None required	LTS	LTS
TR-4: Increased Daily Traffic Volumes on Cosumnes River Boulevard between Center Parkway and Bruceville Road	MM TR-1: Widen Cosumnes River Boulevard between Center Parkway and Bruceville Road	PS	SU
TR-5: Increased Peak Hour Traffic Volumes on Critical Turn Movements at the Freeport Boulevard/Meadowview Road Intersection	MM TR-2: Widen the Eastbound Approach to the Freeport Boulevard/Meadowview Road Intersection to Provide One Additional Left-Turn Lane	PS	LTS
TR-6: Improved Operations at the 24th Street/Meadowview Road intersection	None required	LTS	LTS
TR-7: Improved Operations at the Franklin Boulevard/Mack Road Intersection	None required	LTS	LTS
TR-8: Improved Operations at the Franklin Boulevard/Cosumnes River Boulevard Intersection	None required	LTS	LTS
TR-9: Increased Peak Hour Traffic Volumes on Critical Turn Movements at the Center Parkway/Cosumnes River Boulevard Intersection	MM TR-3: Improve the Center Parkway/Cosumnes River Boulevard Intersection	PS	LTS
TR-10: Increased Peak Hour Traffic Volumes on Critical Turn Movements at the Southbound SR 99 Ramps/Cosumnes River Boulevard Intersection	None required	LTS	LTS
TR-11: Redistribution of Study Area Traffic Resulting in Increased Traffic at the Freeport Boulevard (SR 160)/Cosumnes River Boulevard Intersection	None required	LTS	LTS
TR-12: Temporary Delays in Circulation during Construction of the Project	None required	LTS	LTS

Table S-1. Continued

Impact	CEQA Mitigation	CEQA Level of Significance	CEQA Mitigated Level of Significance
TR-13: Unacceptable (LOS D) Operations on Area Roadways (under the No Build Alternative)	None available	SU	SU
TR-14: Improved Cumulative Operations on Pocket Road between I-5 and Freeport Boulevard	None required	LTS	LTS
TR-15: Improved Cumulative Operations on Meadowview Road between Freeport Boulevard and 24th Street	None required	LTS	LTS
TR-16: Improved Cumulative Operations on Meadowview Road between 24th Street and Brookfield Drive	None required	LTS	LTS
TR-17: Improved Cumulative Operations on Mack Road between Brookfield Drive and Franklin Boulevard	None required	LTS	LTS
TR-18: Improved Cumulative Operations on Mack Road between Franklin Boulevard and Center Parkway	None required	LTS	LTS
TR-19: Improved Cumulative Operations on Franklin Boulevard between Mack Road and Cosumnes River Boulevard	None required	LTS	LTS
TR-20: Increased Cumulative Daily Traffic Volumes on Cosumnes River Boulevard between Franklin Boulevard and Center Parkway	None required	PS	SU
TR-21: Increased Cumulative Daily Traffic Volumes on Cosumnes River Boulevard between Center Parkway and Bruceville Road	MM TR-4: Widen Cosumnes River Boulevard between Center Parkway and Franklin Boulevard	PS	SU
TR-22: Increased Cumulative Daily Traffic Volumes on Cosumnes River Boulevard between Bruceville Road and SR 99	None available	PS	SU
TR-23: Improved Cumulative Operations on Freeport Boulevard between Meadowview Road and Cosumnes River Boulevard	None required	LTS	LTS
TR-24: Improved Cumulative Operations at the Freeport Boulevard/Meadowview Road Intersection	None required	LTS	LTS
TR-25: Increased Cumulative Peak Hour Traffic Volumes On Critical Turn Movements at the SR 160/Freeport Bridge Intersection	MM TR-5: Contribute a Fair Share towards Installation of a Future Traffic Signal at the SR 160/Freeport Bridge Intersection	PS	SU
TR-26: Reduced Cumulative Peak Hour Traffic Volumes Entering the 24th Street/Meadowview Road Intersection	None available	PS	SU
TR-27: Improved Cumulative Operations at he Franklin Boulevard/Mack Road Intersection	None required	LTS	LTS
TR-28: Increased Cumulative Peak Hour Traffic Volumes Entering the Franklin Boulevard/Cosumnes River Boulevard Intersection	None required	LTS	LTS
TR-29: Increased Cumulative Peak Hour Traffic Volumes Entering the Center Parkway/Cosumnes River Boulevard Intersection	MM TR-4: Widen Cosumnes River Boulevard between Center Parkway and Franklin Boulevard	PS	SU
TR-30: Increased Cumulative Peak Hour Traffic Volumes On Critical Turn Movements At The Southbound SR 99 Ramps/Cosumnes River Boulevard Intersection	None required	LTS	LTS
TR-31: Redistribution of Cumulative Study Area Traffic Resulting in LOS E During the P.M. Peak Hour at the Freeport Boulevard (SR 160)/Cosumnes River Boulevard	None required	LTS	LTS

Table S-1. Continued

Impact	CEQA Mitigation	CEQA Level of Significance	CEQA Mitigated Level of Significance
TR-32: Redistribution of Cumulative Traffic on the I-5 Mainline and at Many of the Freeway Ramp Junctions	None required	N	N
Biological Resources			
WTL-1: Permanent Direct Loss of Seasonal Emergent Wetland	MM WTL-1: Avoid or Minimize Indirect Impacts on Wetlands MM WTL-2: Compensate for Loss of Wetlands	PS	LTS
WTL-2: Permanent Direct Loss or Degradation of Freshwater Marsh	MM WTL-1: Avoid or Minimize Indirect Impacts on Wetlands MM WTL-2: Compensate for Loss of Wetlands	PS	LTS
WTL-3: Loss of Vegetated Drainageway	MM WTL-1: Avoid or Minimize Indirect Impacts on Wetlands MM WTL-2: Compensate for Loss of Wetlands	PS	LTS
WTL-4: Cumulative Loss of Seasonal Emergent Wetland, Freshwater Marsh, Drainageways	MM WTL-1: Avoid or Minimize Indirect Impacts on Wetlands MM WTL-2: Compensate for Loss of Wetlands	PS	LTS
VEG-1: Introduction or Spread of Noxious Weeds	MM VEG-1: Prevent the Introduction or Spread of Noxious Weeds	PS	LTS
VEG-2: Loss of Protected Trees	MM VEG-2: Protect Trees to be Avoided by Construction MM VEG-3: Compensate for Loss of Protected Trees	PS	LTS
VEG-3: Cumulative Loss of Protected Trees and the Spread of Noxious Weeds in the Project Vicinity	MM VEG-1: Prevent the Introduction or Spread of Noxious Weeds MM VEG-2: Protect Trees to be Avoided by Construction MM VEG-3: Compensate for Loss of Protected Trees	PS	LTS
WLD-1: Disturbance of Nesting Migratory Birds, Including Raptors	MM WLD-1: Avoid Impacts on Nesting Migratory Birds, Including Raptors	PS	LTS
WLD-2: Cumulative Loss of Nesting Migratory Birds	MM WLD-1: Avoid Impacts on Nesting Migratory Birds, Including Raptors	PS	LTS
TES-1: Temporary, Indirect Increased Sedimentation in Suitable Habitat for Vernal Pool Invertebrates	MM TES-1: Environmental Education Program MM TES-2: Avoid Indirect Impacts on Special-Status Wildlife Species MM TES-3: Avoid Indirect Impacts on Listed Vernal Pool Invertebrates	LTS	LTS
TES-2: Mortality or Disturbance to Valley Elderberry Longhorn Beetles	MM TES-1: Environmental Education Program MM TES-2: Avoid Indirect Impacts on Special-Status Wildlife Species MM TES-4: Avoid Impacts on Valley Elderberry Longhorn Beetles MM TES-5: Compensate for Direct Impacts on Valley Elderberry Longhorn Beetles	PS	LTS

Table S-1. Continued

Impact	CEQA Mitigation	CEQA Level of Significance	CEQA Mitigated Level of Significance
TES-3: Loss of Habitat for Giant Garter Snake	MM TES-1: Environmental Education Program MM TES-2: Avoid Indirect Impacts on Special-Status Wildlife Species MM TES-6: Avoid Impacts on Giant Garter Snake MM TES-7: Compensate for Direct Impacts on Giant Garter Snakes	PS	LTS
TES-4: Potential Harm or Mortality of Northwestern Pond Turtles	MM TES-1: Environmental Education Program MM TES-2: Avoid Indirect Impacts on Special-Status Wildlife Species MM TES-6: Avoid Impacts on Giant Garter Snake MM TES-8: Avoid Impacts on Northwestern Pond Turtle	PS	LTS
TES-5: Disturbance of Nesting Swainson's Hawks and Loss of Swainson's Hawk Foraging Habitat	MM VEG-2: Protect Trees to be Avoided by Construction MM VEG-3: Compensate for Loss of Protected Trees MM TES-1: Environmental Education Program MM TES-2: Avoid Indirect Impacts on Special-Status Wildlife Species MM TES-9: Avoid Impacts on Nesting Swainson's Hawks MM TES-10: Compensate for Loss of Swainson's Hawk Foraging Habitat	PS	LTS
TES-6: Disturbance of Nesting Special-Status Birds and Loss of Foraging Habitat	MM TES-1: Environmental Education Program MM TES-2: Avoid Indirect Impacts on Special-Status Wildlife Species MM TES-9: Avoid Impacts on Nesting Swainson's Hawks MM TES-10: Compensate for Loss of Swainson's Hawk Foraging Habitat MM TES-11: Avoid Impacts on Nesting Special-Status Birds	PS	LTS

Table S-1. Continued

Impact	CEQA Mitigation	CEQA Level of Significance	CEQA Mitigated Level of Significance
TES 7: Cumulative Loss of Special-Status Vernal Pool Invertebrates, VELB, Giant Garter Snake Habitat, Northwestern Pond Turtle, Swainson's Hawk, and Special-Status Bird Nesting Habitat	MM TES-1: Environmental Education Program MM TES-2: Avoid Indirect Impacts on Special-Status Wildlife Species MM TES-3: Avoid and Compensate for Indirect Impacts on Listed Vernal Pool Invertebrates MM TES-4: Avoid Impacts on Valley Elderberry Longhorn Beetles MM TES-5: Compensate for Direct Impacts on Valley Elderberry Longhorn Beetles MM TES-6: Avoid Impacts on Giant Garter Snake MM TES-7: Compensate for Direct Impacts on Giant Garter Snakes MM TES-8: Avoid Impacts on Northwestern Pond Turtle MM TES-9: Avoid Impacts on Nesting Swainson's Hawks MM TES-10: Compensate for Loss of Swainson's Hawk Foraging Habitat MM TES-11: Avoid Impacts on Nesting Special-Status Birds	PS	SU
Hazards			
HAZ-1: Potential for Exposure of Previously Unknown Hazardous Wastes to Construction Workers and/or Nearby Land Uses	MM HAZ-1: Sampling, Testing, Removal, Storage, Transportation, and Disposal of Yellow Striping along Existing Roadway MM HAZ-2: Develop a Health and Safety Plan (HASP) to Address Worker Health and Safety MM HAZ-3: Sampling and Analysis of Transformer Fluid from Electrical Transformers MM HAZ-4: Testing for ADL in Surface/Near-Surface Soils MM AQ-2: Control Visible Emissions from Off-Road Diesel Powered Equipment	PS	LTS

Table S-1. Continued

Impact	CEQA Mitigation	CEQA Level of Significance	CEQA Mitigated Level of Significance
HAZ-2: Potential for Exposure of Known Hazardous Materials to Humans or the Environment	MM HAZ-1: Sampling, Testing, Removal, Storage, Transportation, and Disposal of Yellow Striping along Existing Roadway MM HAZ-2: Develop a Health and Safety Plan (HASP) to Address Worker Health and Safety MM HAZ-3: Sampling and Analysis of Transformer Fluid from Electrical Transformers MM HAZ-4: Testing for ADL in Surface/Near-Surface Soils MM AQ-2: Control Visible Emissions from Off-Road Diesel Powered Equipment	PS	LTS
HAZ-3: Potential for Exposure of Humans and the Environment to Hazardous Conditions due to the Accidental Release of Hazardous Materials	None required	LTS	LTS
HAZ-4: Potential Exposure of Construction Workers to Hazardous Concentrations of Asbestos-Containing Materials in the Stonecrest Avenue Overpass	MM HAZ-5: Comply with Caltrans Requirements to Demolish Bridge Structures	LTS	LTS
HAZ-5: Potential Use of Contaminated Import/Borrow Material to Construct the Overcrossing	MM HAZ-6: Sampling and Analysis of Any Import/Borrow Material	PS	LTS
Noise			
NZ-1: Permanent Exposure to Operational Traffic Noise	MM NZ-1: Construct a Noise Barrier Along the North Side of the Alignment West of Franklin Boulevard	PS	LTS
NZ-2: Temporary Exposure to Construction Noise	MM NZ-2: Employ Noise-Reducing Construction Practices	PS	SU
Public Services and Utilities			
UT-1: Interference with Existing Utility Infrastructure	MM UT-1: Notify Residents, Businesses, Emergency Services Personnel and Service Providers of Public Service and Utilities Disruption MM UT-2: Adopt Utility Avoidance Measures Recommended by Underground Service Alert Evaluation	PS	LTS
UT-2: Interference with Law Enforcement, Fire Protection, and Emergency Medical Services during Construction	MM UT-3: Comply with Emergency Service Travel Needs and Evacuation Routes and Plans	PS	LTS
UT-3: Generation of Solid Waste	None required	LTS	LTS
UT-4: Interfere with Planned Infrastructure	MM UT-4: Coordinate Construction Activities to Reduce Interference with Planned Infrastructure	PS	LTS

Table S-1. Continued

Impact	CEQA Mitigation	CEQA Level of Significance	CEQA Mitigated Level of Significance
Aesthetics			
VIS-1: Temporary Visual Changes from Construction	MM VIS-1: Prepare and Implement a Lighting Plan	PS	LTS
VIS-2: Permanent Changes in Light and Glare	MM VIS-1: Prepare and Implement a Lighting Plan MM VIS-2: Use Low-Sheen and Nonreflective Surface Materials on Walls, Railings, and Light Standards	PS	SU
VIS-3: Permanent Changes to Views in Landscape Unit 1 (Freeport)	None required	LTS	LTS
VIS-4: Permanent Changes to Views in Landscape Unit 2 (Interstate 5)	None required	LTS	LTS
VIS-5: Permanent Changes to Views in Landscape Unit 3 (Stonecrest Avenue Overcrossing)	None required	LTS	LTS
VIS-6: Permanent Changes to Views in Landscape Unit 4 (Meadowview Community)	MM VIS-3: Incorporate Design Characteristics to Minimize Visual Obtrusion MM VIS-4: Incorporate Aesthetic Treatments within the Roadway Corridor MM VIS-5: Provide Aesthetic Treatments to the Noise Barrier	PS	SU
VIS-7: Permanent Changes to Views in Landscape Unit 5 (Franklin Boulevard/Cosumnes River Boulevard Intersection)	None required	LTS	LTS
VIS-8: Consistency with Local Visual Policies	MM VIS-1: Prepare and Implement a Lighting Plan MM VIS-2: Use Low-Sheen and Nonreflective Surface Materials on Walls, Railings, and Light Standards	LTS	LTS
VIS-9: Cumulative Change in Viewshed	None available	PS	SU
Cultural Resources			
CR-1: Direct Damage to or Destruction of Baked Clay Scatter 1 during Construction of the Roadway	None required	N	N
CR-2: Inadvertent Direct Damage to or Destruction of Buried Archaeological Resources and Human Remains during Construction of the Roadway	MM CR-1: Stop Work If Archaeological Materials Are Discovered during Construction MM CR-2: Stop Work If Human Remains Are Discovered during Construction	PS	LTS

Notes: N = no impact
LTS = less than significant impact
PS = potentially significant impact
SU = significant and unavoidable impact

Chapter 1 Purpose of and Need for Project

1.1 Overview

The City of Sacramento (City), in conjunction with the Federal Highway Administration (FHWA), is proposing to construct the Interstate 5 (I-5)/Cosumnes River Boulevard Interchange Project (proposed action). The City is the lead agency under the California Environmental Quality Act (CEQA), and Caltrans is a responsible agency under CEQA. FHWA is the federal lead agency under the National Environmental Policy Act (NEPA), with Caltrans acting as liaison and providing oversight for the NEPA process. FHWA must approve the new connection to I-5 and may be providing funding for a portion of the proposed action.

The interchange would be located in southwest Sacramento. The proposed action would include extending Cosumnes River Boulevard from its current westerly terminus at Franklin Boulevard to an interchange at I-5, and then farther west to an at-grade intersection with Freeport Boulevard in the currently unincorporated town of Freeport. As described in Chapter 2, "Project Alternatives," two build alternatives are being considered.

The proposed project is consistent with the City of Sacramento General Plan and the Airport-Meadowview Community Plan. The project would provide the necessary transportation infrastructure to complete planned development while maintaining acceptable levels of service on city roadways. Figure 1-1 identifies the location of the proposed action within the Sacramento County vicinity. Figure 1-2 shows the location in more detail within southwestern Sacramento. Figure 1-3 provides a topographic map of the project area.

Cosumnes River Boulevard is a major east-west arterial roadway in Sacramento. Part of the roadway is already constructed, from Franklin Boulevard to State Route (SR) 99, at which point it becomes Calvine Road within unincorporated Sacramento County. Calvine Road is a major arterial, extending east to Grant Line Road and servicing major growth areas in south Sacramento County. The City of Sacramento General Plan (City of Sacramento 1988, as amended through 2000) includes extension of Cosumnes River Boulevard westerly of Franklin Boulevard with an interchange at I-5.

The most significant north-south interregional facilities in the project area are I-5 and SR 99. The proposed action would improve access between these facilities. I-5 is a six-lane freeway from the Elk Grove Boulevard interchange to the South Land Park Drive overcrossing, at which point it becomes an eight-lane freeway. Florin and Meadowview Roads are the major east-west corridors in the Airport-Meadowview Community Plan Area; both connect to I-5 and SR 99. Freeport Boulevard and 24th Street, which terminates just north of the project area, are the major north-south corridors in southern Sacramento. These roadways are shown on Figure 1-3.

1.2 Project Purpose and Need

The purpose of and need for this proposed action are discussed below. Under NEPA, the "purpose of" and "need for" a proposed action are closely linked, but subtly different. Need may be thought of as a specific problem, and the purpose as an intention to solve the problem.

1.3 Project Purpose

The purpose of the proposed action is to provide route continuity and improve circulation in south Sacramento, reduce existing congestion and future congestion along existing roads and interchanges along I-5, improve traffic conditions, improve safety, provide improved medical and emergency vehicle response times in the project area, improve air quality by reducing overall vehicle miles of travel and vehicle hours of travel in the project area, and accommodate anticipated travel demand through the year 2025. Specifically, the project purpose is to:

- Improve route continuity and regional east-west circulation in south Sacramento by connecting Franklin Boulevard to I-5, which would improve circulation between I-5, SR 99 and points east and improve traffic conditions along adjacent major City arterials.
- Improve traffic operations along the Meadowview Road/Mack Road corridor by reducing peak-hour congestion, thereby resulting in reduced travel time along the corridor, especially improved medical and emergency vehicle response times near the hospital facilities at the easterly limits of the corridor.
- Improve air quality by reducing congestion and providing a more direct route between I-5 and SR 99, thereby reducing vehicle miles of travel and vehicle hours of travel in the project area.
- Improve safety conditions in the project area by providing a grade-separated crossing of the UPRR tracks (i.e., providing an alterative grade-separated route for traffic currently using Meadowview Road and the existing at-grade crossing of UPRR).
- Improve traffic operations at the I-5/Pocket Road-Meadowview Road interchange and I-5/Laguna Boulevard interchange by allowing traffic to redistribute throughout the area by using the I-5/Cosumnes River Boulevard interchange, thereby reducing existing and projected congestion.

1.4 Project Need

The proposed action is needed because south Sacramento is currently facing traffic congestion and its resultant inefficient energy use, deteriorating air quality, and deteriorating levels of traffic safety. Providing a continuous route between I-5 and SR 99 by connecting Cosumnes River Boulevard at Franklin Road to I-5 is a necessary component of the overall program to improve transportation in south Sacramento. To improve traffic conditions on this corridor, the following needs must be addressed:

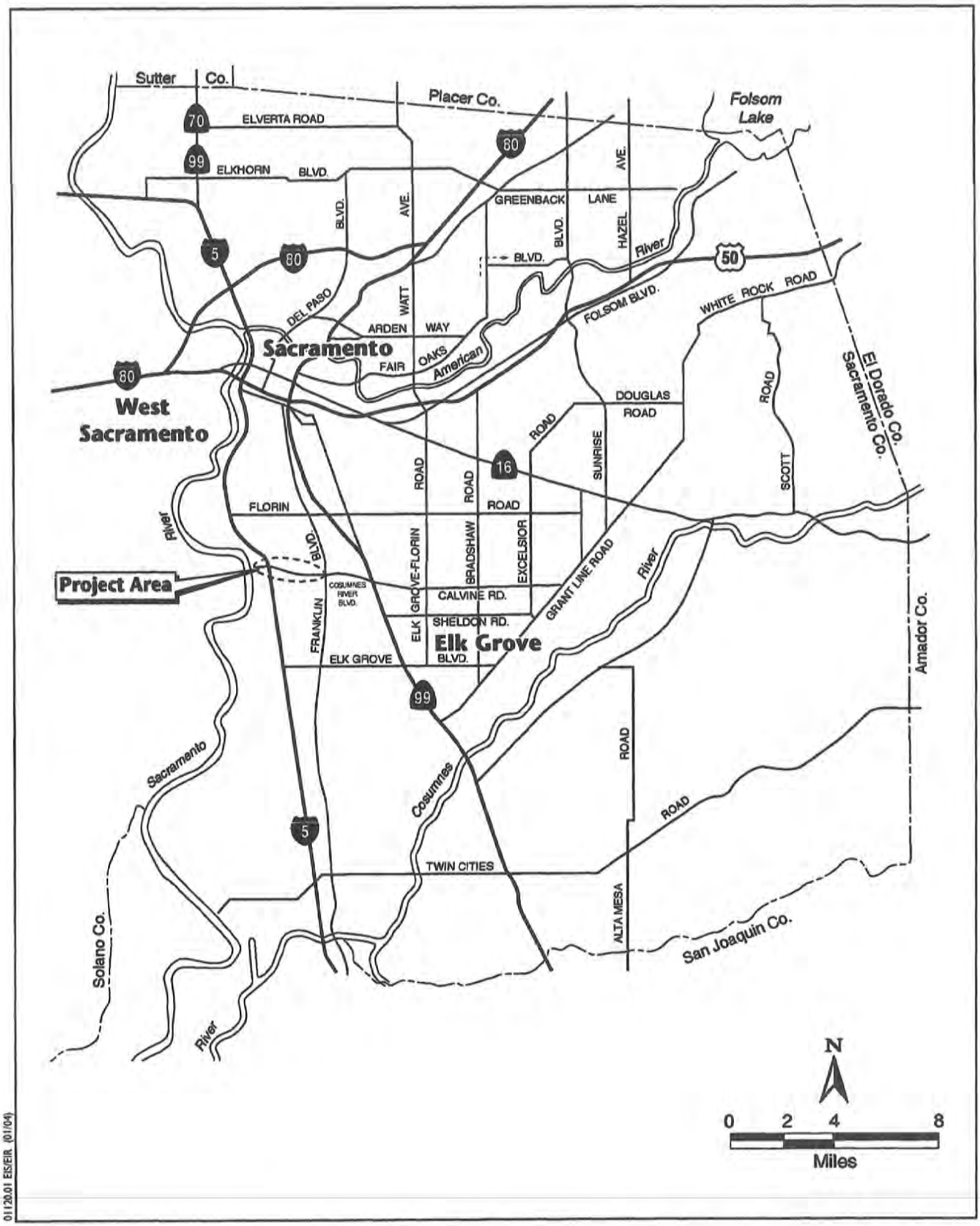


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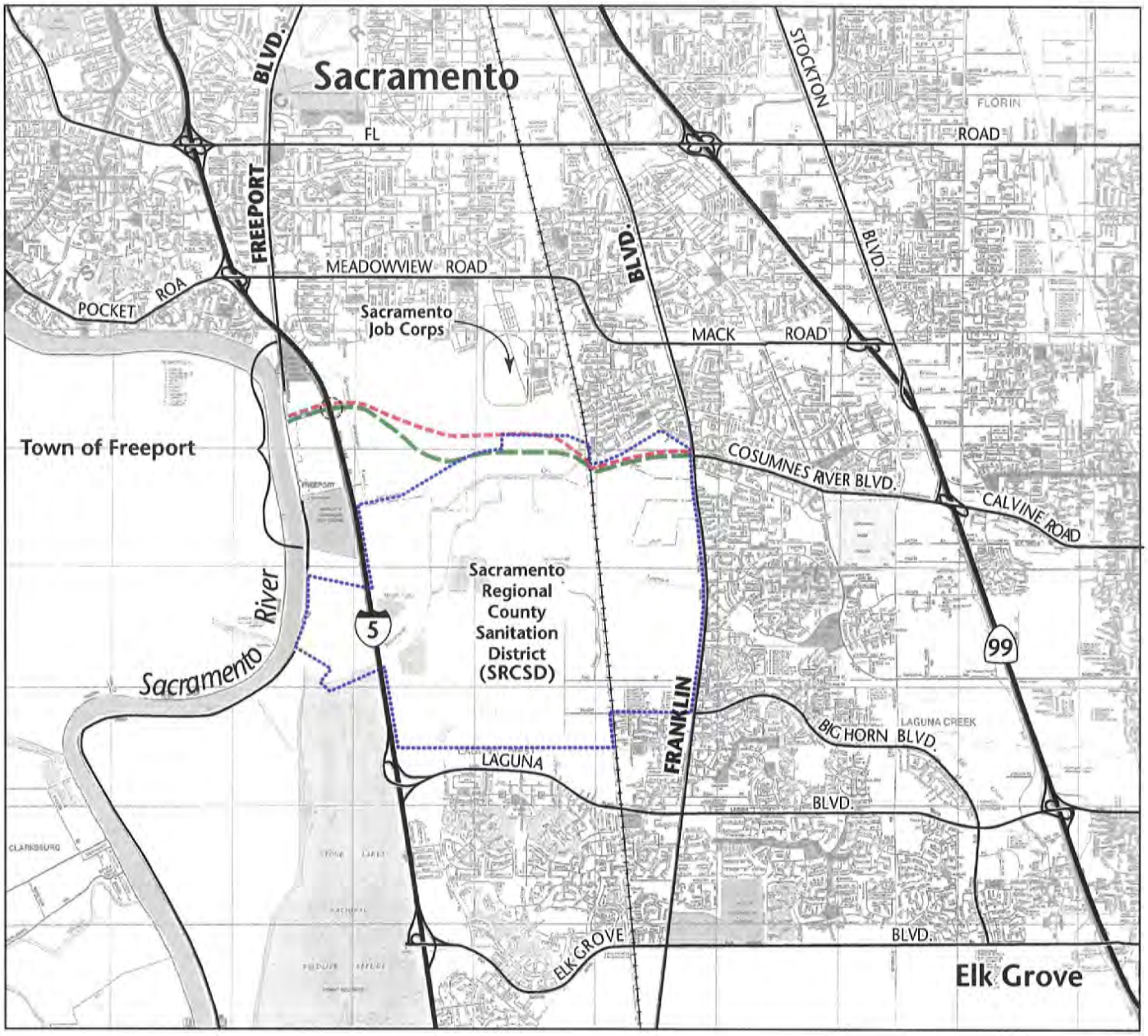
Figure 1-1
Vicinity Map
I-5/Cosumnes River Boulevard Interchange Project



Legend

- Alternative A: North Alignment (Preferred)
- Alternative B: South Alignment
- Proposed Interchange Location
- Sacramento Regional County Sanitation District (SRCSD) Boundary

N

0 4,000 Feet

Figure 1-2
Location Map
I-5/Cosumnes River Boulevard Interchange Project

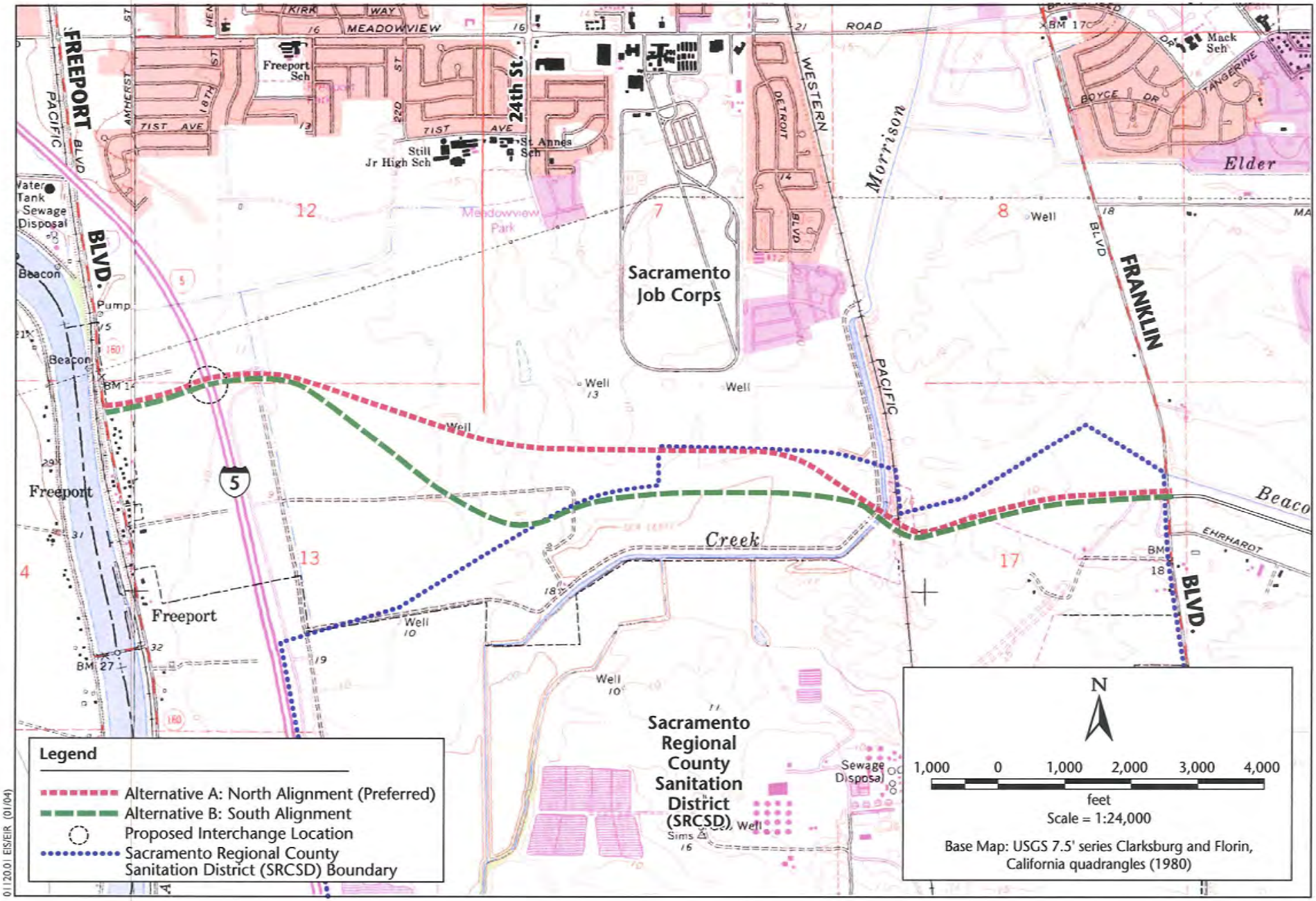


Figure 1-3
Topographic Map
I-5/Cosumnes River Boulevard Interchange Project

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- Improve route continuity
- Reduce existing and projected traffic congestion and improve traffic safety
- Redistribute traffic along I-5 at the I-5 interchanges
- Reduce travel time and delay

1.4.1 Improve Route Continuity

Construction of the I-5/Cosumnes River Boulevard interchange was originally identified in a study of the SR 148 corridor conducted by Caltrans in the early 1960s. On February 27, 1963, Caltrans adopted the SR 148 freeway corridor segment between I-5 and SR 99. The California Highway Commission (now known as the California Transportation Commission) withdrew its designation of SR 148 in 1974 due to financial constraints.

In a memorandum dated July 1, 1974, the County of Sacramento Department of Public Works recommended that the City of Sacramento maintain the adopted route as an east-west transportation corridor that would be less than freeway status. This same recommendation suggested that interchanges be constructed at I-5 and SR 99 and that the intersections be at-grade. The City of Sacramento then embarked on the necessary steps to begin preserving right-of-way within the Route 148 corridor.

On November 4, 1981, the Sacramento City Council certified an Environmental Impact Report (EIR) for the Route 148 Arterial Plan and adopted the route alignment for the arterial. That approval allowed the City to begin reserving the right-of-way for the future development of State Route 148 and to construct segments of the approved route as funds became available. After approval of the State Route 148 Arterial Plan, the name of the proposed facility was changed to Cosumnes River Boulevard. The names State Route 148 and Cosumnes River Boulevard are synonymous and refer to the same proposed facility within the City of Sacramento.

The State Route 148 Arterial adopted in 1981 was a 9.2-kilometer (km)-long (5.7-mile [mi]-long) east-west corridor. The approved alignment (Alternative 1—148 River Bend Overcrossing), commenced at I-5, proceeded eastward, and ultimately ended east of SR 99 at the intersection of Calvine Road and Short Road. For the segment between I-5 and approximately Morrison Creek (approximately 1.74 km [5,700 feet]), a specific alignment was not adopted. The specific alignment in this segment was to be designated when development of the area occurred. From approximately Morrison Creek, the adopted arterial continued east and intersected with Franklin Boulevard, Center Parkway, and Bruceville Road; crossed State Route 99 near Duluth Avenue; and dipped to the southeast to the intersection of Calvine Road and Short Road. Construction along this alignment has been completed from Franklin Boulevard to State Route 99, extending easterly into the unincorporated area as Calvine Road.

The proposed project is included in the City of Sacramento General Plan and the Sacramento Area Metropolitan Transportation Plan (MTP). Design of the project is included in the Metropolitan Transportation Improvement Plan (MTIP) and the State Transportation Improvement Plan (STIP). The project is also included in the 2002 MTIP.

I-5 is listed as a high priority route in the 1992 Caltrans District 3 System Management Plan. The I-5 Transportation Concept Report (April 1997) includes the proposed Cosumnes River Boulevard interchange as an information item (with Transportation Concept Report support), and shows the mainline concept facility as six mixed flow lanes, plus High Occupancy Vehicle (HOV) lanes, and auxiliary lanes, if feasible.

1.4.2 Reduce Existing and Projected Traffic Congestion and Improve Traffic Safety

Level of service along roadway segments and at intersections is defined in terms of delay, which is a measure of drive discomfort and frustration, fuel consumption, and lost travel time. Level of Service A represents no delay and Level of Service F represents very heavy traffic congestion and considerable delay. Level of Service F often occurs with over-saturation (i.e., when arrival flow rates exceed the capacity of the roadway segment or intersection).

Traffic in south Sacramento currently wanting to travel between SR 99 and I-5 currently use Cosumnes River Boulevard to Franklin Boulevard and then head north along Meadowview Road/Mack Road or head south to Laguna Boulevard. Completion of the Cosumnes River Boulevard connection allows for improved east-west circulation, relieving these major arterials. Average daily traffic volumes on the Meadowview/Mack Road corridor are expected to increase by 50% by Year 2025, which would result in level of service F on several key segments. The proposed project would reduce traffic by 20% or more, and improve LOS (reducing vehicle delays) by at least one level.

As shown in Table 1-1, traffic projections in Year 2025 without the project would result in unacceptable levels of service along segments of Meadowview Road, Mack Road, Franklin Boulevard, Cosumnes River Boulevard, and Freeport Boulevard. Year 2025 traffic projections with the project indicate that the level of service along these roadway segments would improve for all roadway segments with the exception of Cosumnes River Boulevard east of Franklin Boulevard.

Based on the data summarized in Table 1-1, the project would cause a redistribution of study-area traffic from Meadowview Road/Mack Road to Cosumnes River Boulevard, thereby generally improving operations on major arterials in south Sacramento compared to the No-Build Alternative.

Improved traffic operations along these major arterials would result in improved medical and emergency vehicle response times, particularly during peak periods, to several schools and medical and hospital facilities in the project area, including Cosumnes River College, Kaiser Permanente Medical Center South, and Methodist Hospital. In addition, the proposed action includes a grade-separated crossing of the UPRR tracks, thereby improving traffic safety as compared to the Meadowview Road corridor, which has an at-grade crossing of the railroad tracks.

Table 1-1. Study Area Roadway Segment Operations – 2025 Conditions With and Without Project

Roadway	Segment	Number of Lanes	Year 2025 traffic No Build Alternative			Year 2025 traffic Build Alternatives		
			Daily Volume	V/C Ratio	LOS	Daily Volume	V/C Ratio	LOS
Pocket Road	Greenhaven Drive to I-5	4	26,500	0.74	C	27,800	0.77	C
	I-5 to Freeport Boulevard	4	44,900	***1.25***	***F***	23,000	0.64	B
Meadowview Road	Freeport Boulevard to 24th Street	4	38,000	***1.06***	***F***	27,400	0.76	C
	24th Street to Brookfield Drive	4	45,400	***1.26***	***F***	34,600	***0.96***	***E***
Mack Road	Brookfield Drive to Franklin Boulevard	4	35,700	***0.99***	***E***	28,600	0.79	C
	Franklin Boulevard to Center Parkway	4	29,400	***0.82***	***D***	28,000	0.78	C
Franklin Boulevard	Mack Road to Cosumnes River Boulevard	4	43,400	***1.21***	***F***	38,500	***1.07***	***F***
Cosumnes River Boulevard	Freeport Boulevard to I-5	4	-	-	-	24,100	0.60	B
	I-5 to 24th Street	6	-	-	-	29,200	0.49	A
	24th Street to Franklin Boulevard	4	-	-	-	27,300	0.68	B
	Franklin Boulevard to Center Parkway	4	24,700	0.62	B	35,700	***0.89***	***D***
	Center Parkway to Bruceville Road	4	32,100	***0.80***	***D***	38,000	***0.95***	***E***
	Bruceville Road to SR 99	6	54,300	***0.91***	***E***	58,800	***0.98***	***E***
Freeport Boulevard	Meadowview Road to Cosumnes River Boulevard	2	18,400	***0.92***	***E***	14,400	0.72	C
	Cosumnes River Boulevard to Freeport Bridge	2	7,100	0.39	A	9,400	0.52	A
	South of Freeport Bridge	2	3,500	0.19	A	3,300	0.18	A
Freeport Bridge	South River Road to SR 160	2	5,100	0.28	A	7,200	0.40	A

Source: Fehr & Peers 2005.
Notes: Text in ***bold italics*** and inside box indicates unacceptable levels of service. Cosumnes River Boulevard has high access control. All other roadways are assumed to have moderate access control.

1.4.3 Redistribute Traffic along I-5 and at the I-5 Interchanges

Implementation of the proposed action would provide a new connection to I-5, thereby providing for redistribution of on-ramp/off-ramp traffic, and providing improvement of mainline operations between Laguna Boulevard and Meadowview Road.

The closest east-west connector between I-5 and SR 99 to the north of the project is the Meadowview Road/Mack Road corridor. The Pocket Road/Meadowview interchange with I-5 is located at kilometer post 26.0 (postmile 16.2), a distance of 2.0 kilometers (1.2 miles from the proposed Cosumnes River Boulevard interchange located at approximately kilometer post 24.0 (postmile 14.9). The closest east-west connector between I-5 and SR 99 to the south is Laguna Boulevard. The Laguna Boulevard interchange with I-5 is located at kilometer post 19.4 (postmile 12), a distance of 4.6 kilometers (2.9 miles) from the proposed interchange.

Mainline operations were evaluated for baseline conditions (2002), "Build" year (estimated at 2005), and at "design year" (estimated at 2025) (Table 1-2). The "design year" analysis included mainline operations with and without the interchange project. The results show that the Route Concept Level of Service E is maintained in the Future plus Project condition. There is a modest increase in traffic between Cosumnes River Boulevard and Pocket Road due to redistribution of regional traffic. There is a slight degradation in PM peak hour level of service for southbound I-5 between Pocket Road and Cosumnes River Boulevard in 2025 (D to E, but still within the Route Concept level of service), representing redistribution of traffic between these two interchanges. For all other segments, the freeway mainline operations as well with the project as without the project.

Table 1-2. Freeway Mainline LOS – Existing Conditions, 2005 Conditions, and 2025 Conditions

Freeway Sections and Associated Analysis Year	AM Peak Hour		PM Peak Hour	
	Density[a]	LOS[b]	Density[a]	LOS[b]
Baseline Conditions (2002)				
Northbound I-5: Laguna Boulevard to Pocket Road	29	D	17	B
Southbound I-5: Pocket Road to Laguna Boulevard	13	B	27	D
Build Alternatives A and B (2005)				
Northbound I-5: Laguna Boulevard to Cosumnes River Boulevard	31	D	19	C
Northbound I-5: Cosumnes River Boulevard to Pocket Road	32	D	20	C
Southbound I-5: Pocket Road to Cosumnes River Boulevard	15	B	31	D
Southbound I-5: Cosumnes River Boulevard to Laguna Boulevard	15	B	30	D
No Build Alternative (2025)				
Northbound I-5: Laguna Boulevard to Pocket Road	37	E	19	C
Southbound I-5: Pocket Road to Laguna Boulevard	15	B	34	D
Build Alternatives A and B (2025)				
Northbound I-5: Laguna Boulevard to Cosumnes River Boulevard	37	E	19	C
Northbound I-5: Cosumnes River Boulevard to Pocket Road	37	E	23	C
Southbound I-5: Pocket Road to Cosumnes River Boulevard	19	C	38	E
Southbound I-5: Cosumnes River Boulevard to Laguna Boulevard	15	B	34	D

Source: Fehr & Peers 2005.
Note: There are no unacceptable operations.
[a] Density in passenger cars per mile per lane.
[b] LOS calculations based on the HCM 2000 procedures.

Pursuant to Caltrans' Design Information Bulletin 77, ramp junction analyses were performed to evaluate operations impacts to the mainline. Mainline through capacity is optimized when ramp junctions operate at one level of service better than mainline level of service. Consequently, for evaluation purposes, the associated freeway operations from Table 1-2 were included, where appropriate, in the ramp junction operations table below (Table 1-3). The table shows acceptable levels of service results for all ramp junctions, with level of service D or better conditions. Additionally, the off-ramp junctions operate at least one level of service or better than the mainline. For off-ramps, two lane exits plus 400 meter (1,300 feet) deceleration lanes are provided, which allow better lane distribution at the exit, further reducing any potential mainline effects.

Table 1-3. Ramp Junction LOS – Existing Conditions and 2025 Conditions

Location	AM Peak Hour LOS		PM Peak Hour LOS	
	Junction	Mainline	Junction	Mainline
Build Alternatives A and B (2005 Conditions)				
Northbound I-5 off-ramp	B	D	A	C
Northbound I-5 on-ramp from Eastbound Cosumnes River Boulevard	C	D	B	C
Northbound I-5 on-ramp from Westbound Cosumnes River Boulevard	C	D	B	C
Southbound I-5 off-ramp	A	B	B	D
Southbound I-5 on-ramp from Westbound Cosumnes River Boulevard	A	B	C	D
Southbound I-5 on-ramp from Eastbound Cosumnes River Boulevard	B	B	C	D
Build Alternatives A and B (Year 2025 Conditions)				
Northbound I-5 off-ramp to Cosumnes River Boulevard	B	E	A	C
Northbound I-5 on-ramp from Eastbound Cosumnes River Boulevard	C	E	B	C
Northbound I-5 on-ramp from Westbound Cosumnes River Boulevard	D	E	C	C
Southbound I-5 off-ramp to Cosumnes River Boulevard	A	C	C	E
Southbound I-5 on-ramp from Westbound Cosumnes River Boulevard	A	B	C	D
Southbound I-5 on-ramp from Eastbound Cosumnes River Boulevard	B	B	D	D

Source: Fehr & Peers 2005.
Note: There are no unacceptable operations.
[a] LOS calculations based on the HCM 2000 procedures.

1.4.4 Reduce Travel Time and Delay

Traffic congestion and lower travel speeds, especially during peak periods, lead to greater delay and higher overall travel times. As shown in Table 1-1, without the project, future traffic congestion would occur along a portion or all of Pocket Road, Meadowview Road, Mack Road, Franklin Boulevard, Cosumnes River Boulevard, and Freeport Boulevard. As these streets become congested, local and regional trip travel times would increase.

Table 1-4 shows that the project would result in reduced travel time and delay in the local area, as well as the sub-regional and regional area by providing a more direct route between I-5 and State Route 99.

Table 1-4. Percent Change in Vehicle Miles Traveled and Vehicle Hours Traveled – 2025 Conditions

Performance Measure	Proposed Project
Local-Area (includes the area bounded by Meadowview Road to the north, Cosumnes River Boulevard to the south, SR-99 to the east, and the Sacramento River to the west.)	
Vehicle miles of travel	-3.5%
Vehicle hours of travel	-7.0%
Sub-Regional (includes the area bounded by Florin Road to the north, Elk Grove Boulevard to the south, Elk Grove Florin Road to the east, and the Sacramento River to the west.)	
Vehicle miles of travel	0.5%
Vehicle hours of travel	-1.4%
Regional (includes portions of El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba counties.)	
Vehicle miles of travel	0.0%
Vehicle hours of travel	-0.3%

Source: Fehr & Peers 2005.

Chapter 2 Project Alternatives

2.1 Alternatives Development Process

The City and Caltrans established a multidisciplinary project development team (PDT) for the proposed action that included representatives of the City, Caltrans, FHWA, Regional Transit, and SRCSD Bufferlands. The PDT identified the following screening criteria to evaluate project alternatives and select the least environmentally damaging practicable alternative. Practicable alternatives must:

- Meet the basic project purpose and need.
- Be capable of implementation after taking into consideration cost, existing technology, and logistics in light of overall project purposes.
- Be consistent with the Regional Transportation Plan (RTP).
- Meet federal transportation air quality conformity requirements.
- Avoid and minimize impacts on wetlands and other regulated waters of the United States to the maximum extent practicable.
- Avoid and minimize impacts on listed species and other sensitive biological resources, including habitats, to the maximum extent practicable.
- Avoid and minimize impacts on the 100-year floodplain.
- Minimize purchase of new right-of-way and displacement of existing residences and businesses.
- Provide improved east-west mobility within the southerly limits of Sacramento, including access to I-5.
- Provide possible economic development opportunities within the project area.
- Serve the existing, planned, and anticipated growth of population in the southern portion of Sacramento.

Based on the environmental technical studies conducted in preparation of the EIS/EIR, impacts on sensitive resources would be almost identical for Build Alternatives A and B. A list of the technical reports detailing the results of these studies is provided in this document, and the reports are available for review at the City's offices.

2.2 Project Alternatives

The No-Build Alternative and two build alternatives, shown in Figure 1-3, are analyzed in an equal level of detail in this EIS/EIR and are summarized below.

- No-Build Alternative
- Build Alternative A: Franklin to Freeport North Alignment (preferred alternative for programming purposes)
- Build Alternative B: Franklin to Freeport South Alignment

2.2.1 The "No Build" Alternative

No roadway improvements would be constructed under the No-Build Alternative. Construction of the following planned projects, however, from the Metropolitan Transportation Plan (Sacramento Area Council of Governments 2002) is assumed in the project area and vicinity by 2025:

- I-5 would be widened with the addition of a high-occupancy vehicle (HOV) lane in both directions.
- The existing Cosumnes River Boulevard would be widened to four lanes between Franklin Boulevard and Bruceville Road.

2.2.2 The "Build" Alternatives

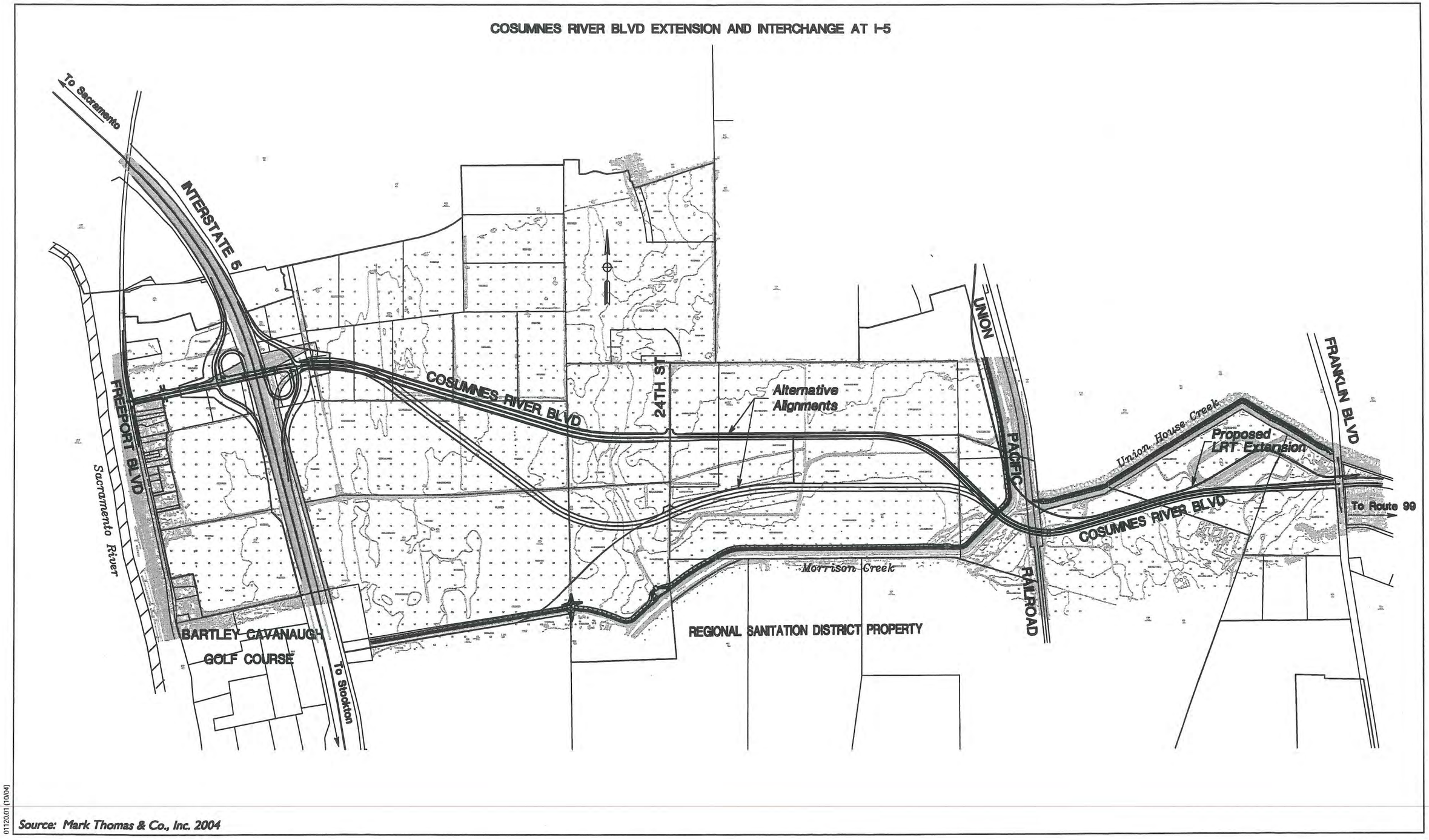
Build Alternative A, the preferred alternative for programming purposes, is to construct Cosumnes River Boulevard from Franklin Boulevard west to Freeport Boulevard and construct an interchange at I-5. Just west of the Morrison Creek Bridge, the Cosumnes River Boulevard alignment would travel north and then west until reaching the interchange location.

Build Alternative B is also to construct Cosumnes River Boulevard from Franklin Boulevard west to Freeport Boulevard and construct an interchange at I-5. Just west of Morrison Creek, the alignment travels west through the Bufferlands adjacent to Morrison Creek. It then enters the southern portion of the Delta Shores parcel and travels northwest to the interchange location.

Build Alternative A has been identified as the preferred alternative for programming purposes because it would avoid bisecting the Bufferlands property, has the support of the local landowners, and parallels the Lower Northwest Interceptor alignment and the Freeport Regional Water Project pipeline, thereby reducing right-of-way requirements for roads and utilities.

Design Details

Mark Thomas & Company was hired by the City of Sacramento Department of Transportation to prepare preliminary design drawings for the proposed action. For the purpose of the surveys and background technical reports, the project footprint was based on maps of the project alignments and an assumed maximum 61-m-wide (200-ft-wide) corridor in sensitive areas for construction of the proposed interchange, Franklin Boulevard/Cosumnes River Boulevard and Freeport Boulevard/Cosumnes River Boulevard intersections, new roadway, and embankment. Mark Thomas & Company has provided the following design details in the Draft Project Report prepared for the proposed action (Mark Thomas & Company 2005) and in the geometric submittal (Mark Thomas & Company 2005). Graphical depictions of the location and design of the I-5 interchange and Morrison Creek/UPRR crossing, and typical road cross sections are provided in Figures 2-1 through 2-5.



Source: Mark Thomas & Co., Inc. 2004

01120.01 (10/04)

Figure 2-1
Project Alternatives
I-5/Cosumnes River Boulevard Interchange Project

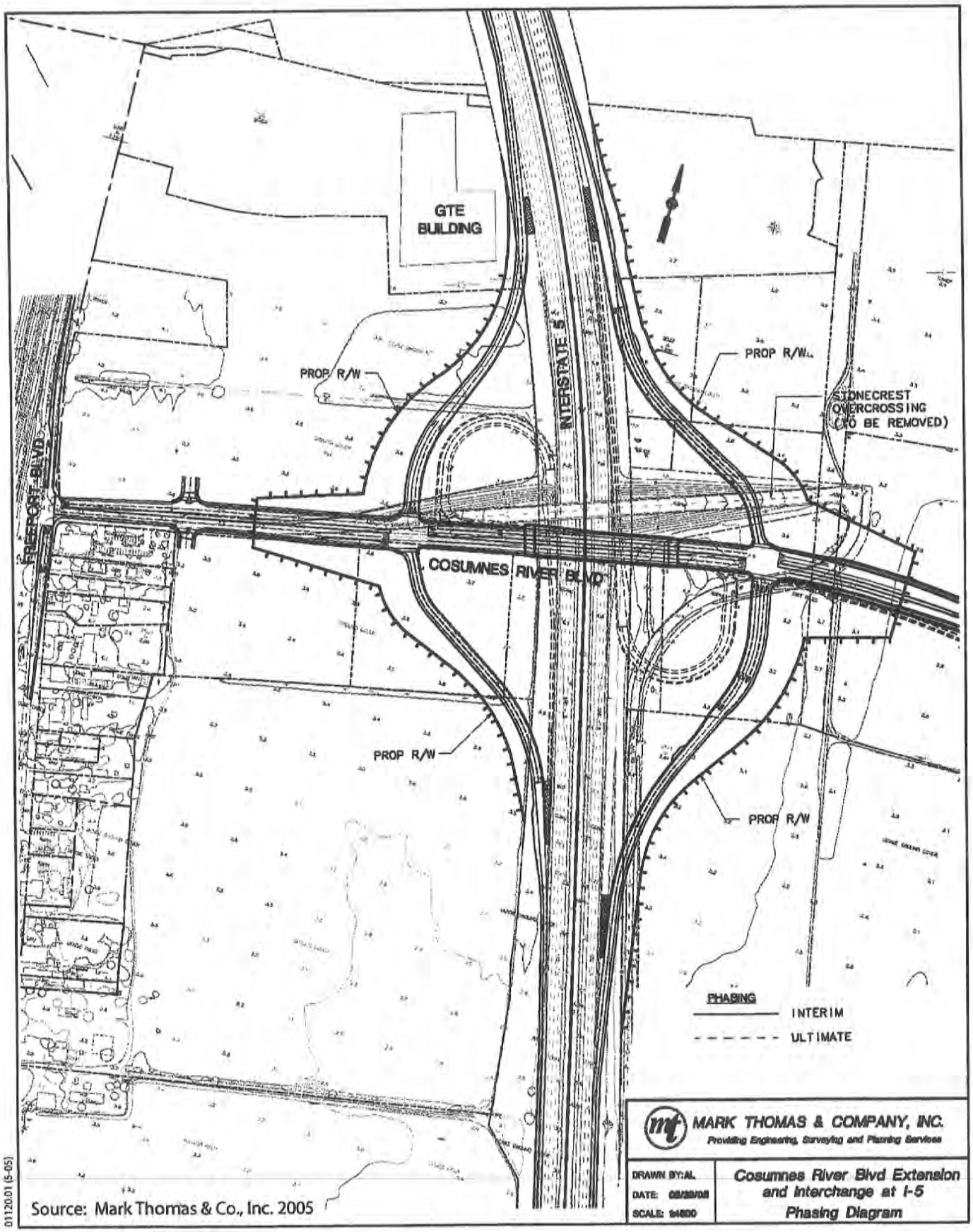
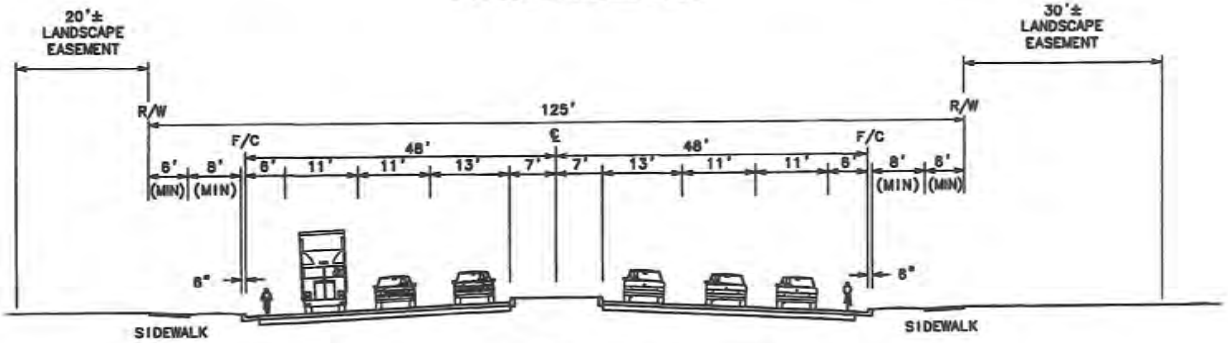
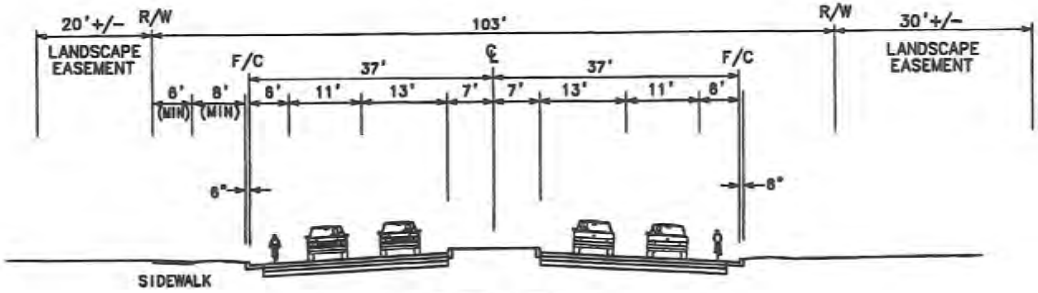


Figure 2-2
Interchange Design and Phasing
I-5/Cosumnes River Boulevard Interchange Project

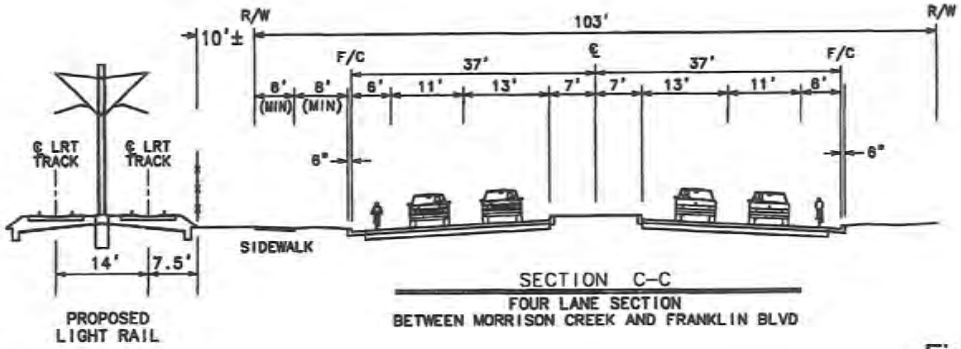
COSUMNES RIVER BLVD EXTENSION AND INTERCHANGE AT I-5
TYPICAL SECTIONS



SECTION A–A
SIX LANE SECTION
BETWEEN I-5 AND 24th STREET



SECTION B–B
FOUR LANE SECTION
BETWEEN 24TH STREET TO MORRISON CREEK



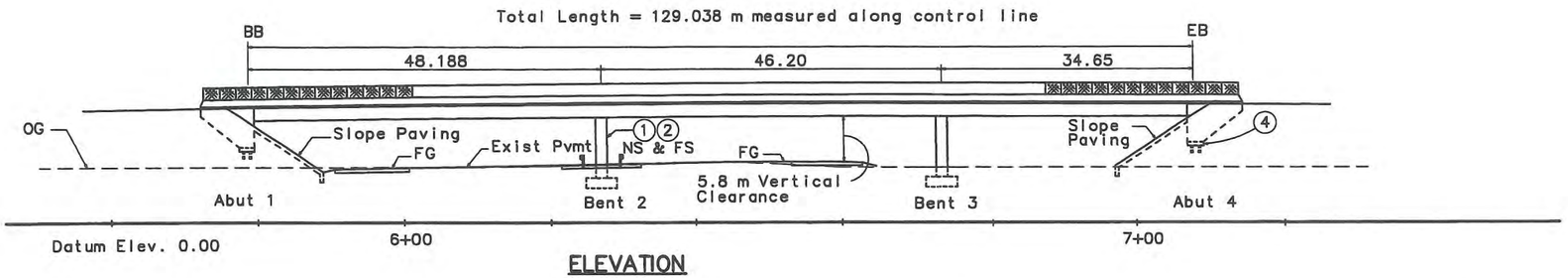
SECTION C–C
FOUR LANE SECTION
BETWEEN MORRISON CREEK AND FRANKLIN BLVD

Figure 2-3. Typical Cross Sections

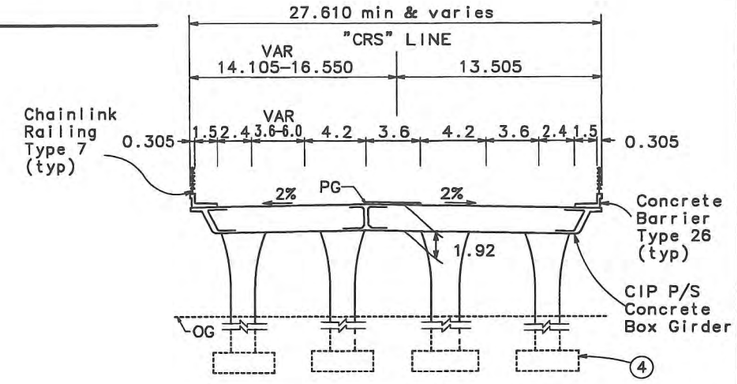
DIST.	COUNTY	ROUTE	POST MILES TOTAL PROJECT
03	Sac	5	

MARK THOMAS & CO., INC.
7300 FOLSOM BLVD.
SACRAMENTO, CA 95826

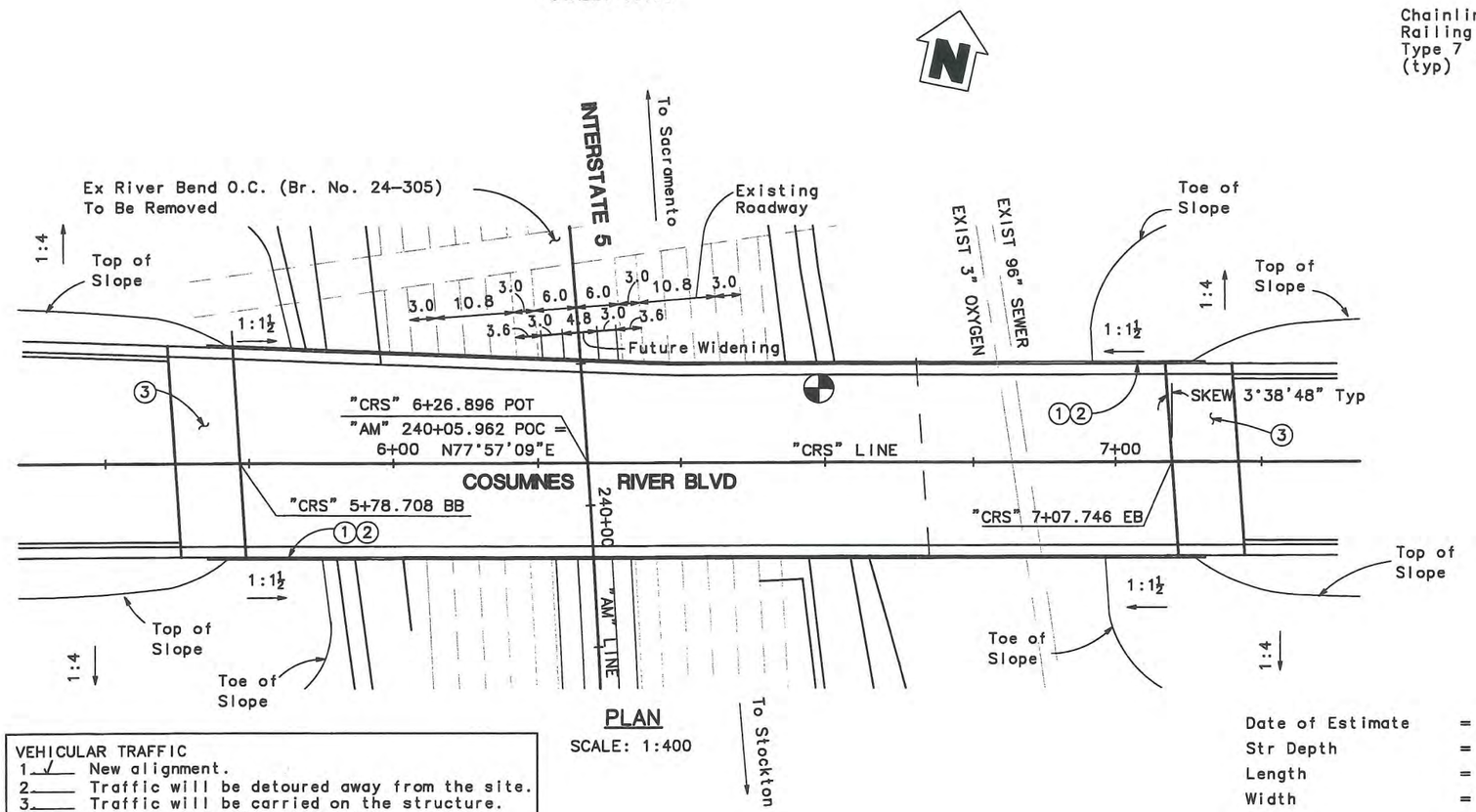
CITY OF SACRAMENTO
927 10TH STREET
SACRAMENTO, CA 95814



ELEVATION
SCALE: 1:400



TYPICAL SECTION
SCALE: 1:200



PLAN
SCALE: 1:400

NOTES

1. Paint bridge number
2. Paint "Cosumnes River Blvd O.C."
3. Structure Approach slab Type N(9)S
4. Assumed spread footing at bent, driven piles at abut.

Indicates Point of Minimum Vertical Clearance (Ramp ETW)

Indicates existing roadway features

VEHICULAR TRAFFIC
1. ✓ New alignment.
2. ___ Traffic will be detoured away from the site.
3. ___ Traffic will be carried on the structure. Stage construction will not be required.
4. ✓ Traffic will pass under the structure on Interstate 5

A. ___ No falsework allowed over traffic.
B. 2 Falsework opening(s) required:

	Temporary Vertical Clearance	Width of Traffic Opening
N Bnd.	4.6	14.7
S Bnd.	4.6	14.7
N/A Two-way	N/A	N/A

C. ___ Temporary traffic lane reduction needed for footing excavation.

Date of Estimate	=	May, 2004
Str Depth	=	1.920 m
Length	=	129.038 m
Width	=	27.61 m
Area	=	3718 m^2

Cost/Sq.m including 10% Mobilization 25% Contingency	=	1,500 $/$m^2$
Total Cost	=	$5,577,000
Bridge Removal	=	$ 250,000
Grand Total	=	$5,827,000

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

RECORDED PROFESSIONAL ENGINEER T.R.FLEMING No. 38131 Exp. 3/31/05 CIVIL STATE OF CALIFORNIA

DESIGNED BY	A. Lee	DATE	12/13/04
DRAWN BY	A. Lee	DATE	12/13/04
CHECKED BY	R. Trigueros	DATE	12/13/04
APPROVED		DATE	

R. Trigueros
PROJECT ENGINEER

PLANNING STUDY

COSUMNES RIVER BLVD O.C.

BRIDGE NO.		CU	03198
SCALE:	AS NOTED	EA	1C5200

PREPARED FOR THE STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

USERNAME => $USER DATE PLOTTED => $DATE TIME PLOTTED => $TIME

ADVANCE PLANNING STUDY SHEET (ENGLISH) (REV. 5/9/00)

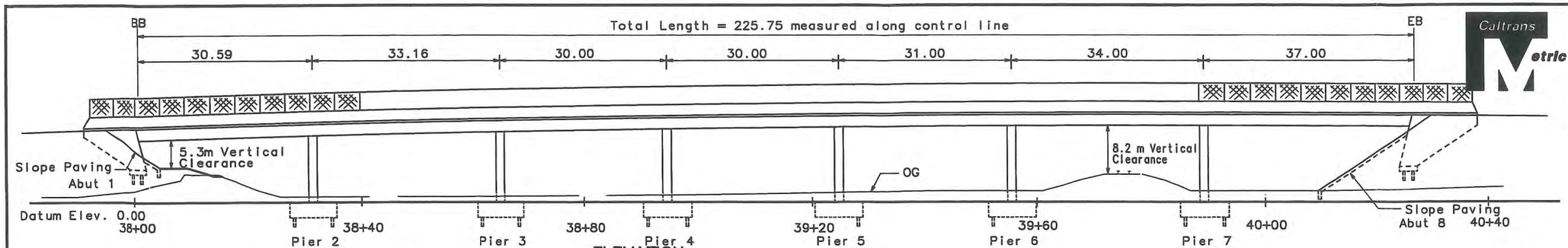
FILE => $REQUEST

Figure 2-4a. Design Details

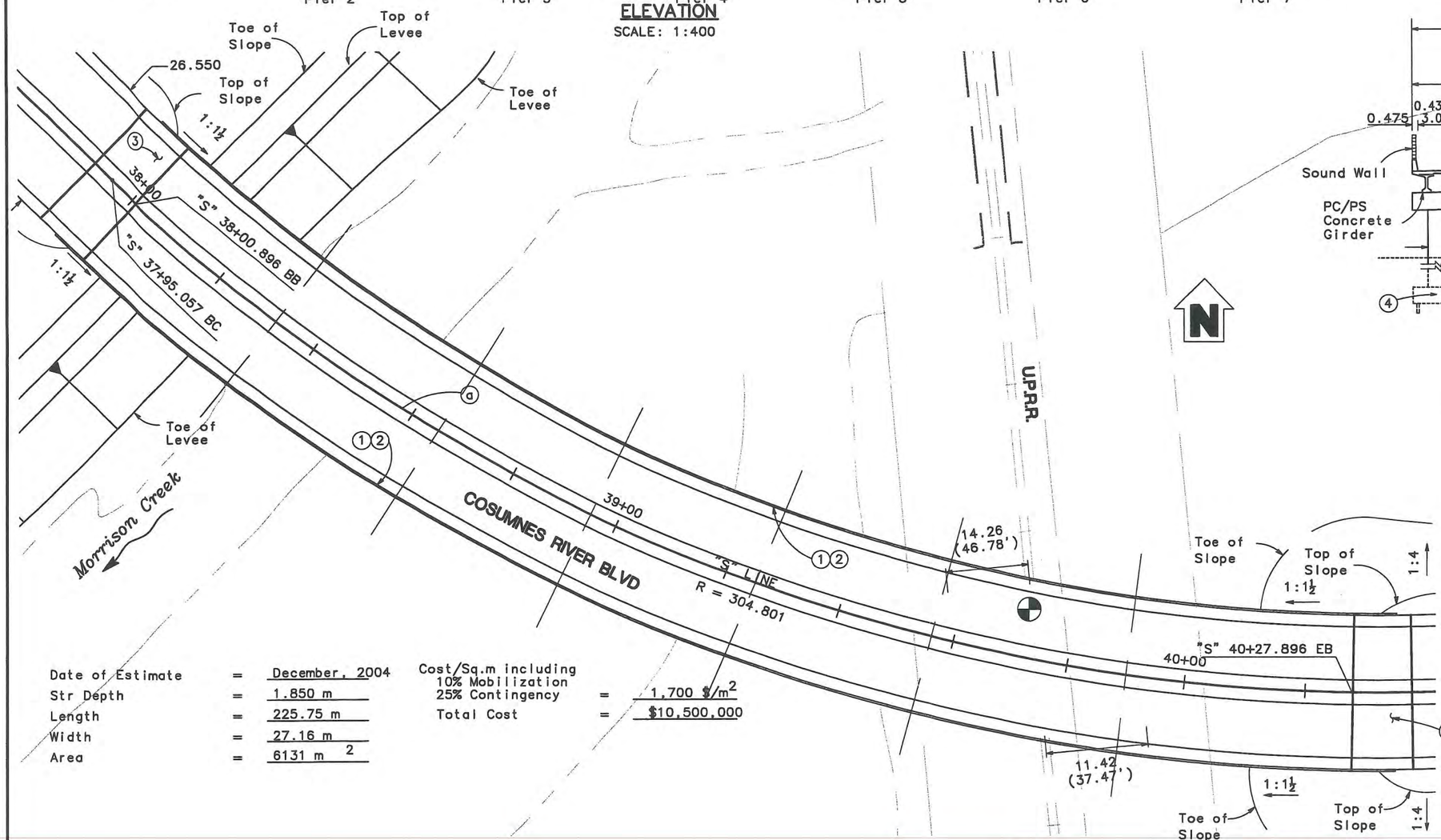
DIST.	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT
03	Sac		

MARK THOMAS & CO., INC.
7300 FOLSOM BLVD.
SACRAMENTO, CA 95826

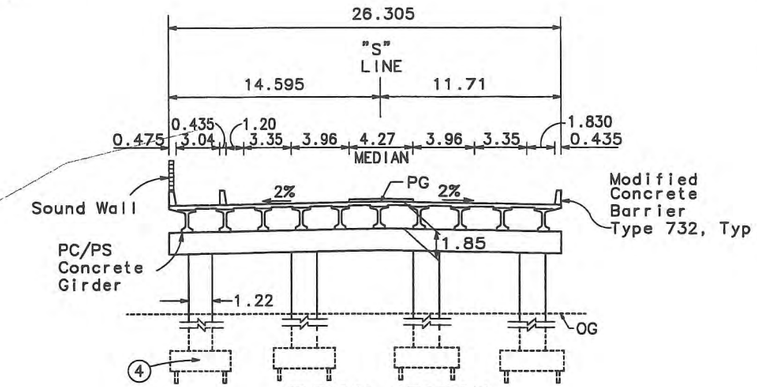
CITY OF SACRAMENTO
927 10TH STREET
SACRAMENTO, CA 95814



ELEVATION
SCALE: 1:400



PLAN
SCALE: 1:400



TYPICAL SECTION
SCALE: 1:200

NOTES

1. Paint bridge number
2. Paint "Morrison Creek/UPRR Bridge"
3. Structure Approach slab Type N(9)S
4. Assumed pile footing at piers and abutments

Indicates Point of Minimum Vertical Clearance (future lane ETW)

Indicates existing roadway features

CURVE DATA

○	LENGTH	RADIUS	DELTA	TANGENT
ⓐ	323.020	304.801	60°43'14"	178.542

Date of Estimate	=	December, 2004	Cost/Sq.m including 10% Mobilization 25% Contingency	= 1,700 $/m²
Str Depth	=	1.850 m	Total Cost	= $10,500,000
Length	=	225.75 m		
Width	=	27.16 m		
Area	=	6131 m²		

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

REGISTERED PROFESSIONAL ENGINEER T.R.FLEMING No. 38131 Exp. 3/31/05 CIVIL STATE OF CALIFORNIA

DESIGNED BY	J. Shingledecker	DATE 12/13/04
DRAWN BY	J. Shingledecker	DATE 12/13/04
CHECKED BY	R. Trigueros	DATE 12/13/04
APPROVED		DATE

PROJECT ENGINEER

PLANNING STUDY

MORRISON CREEK/UPRR BRIDGE
CITY OF SACRAMENTO

BRIDGE NO.	CU
SCALE: AS NOTED	EA

ADVANCE PLANNING STUDY SHEET (METRIC) (REV. 3/1/99)

Figure 2-4b. Design Details

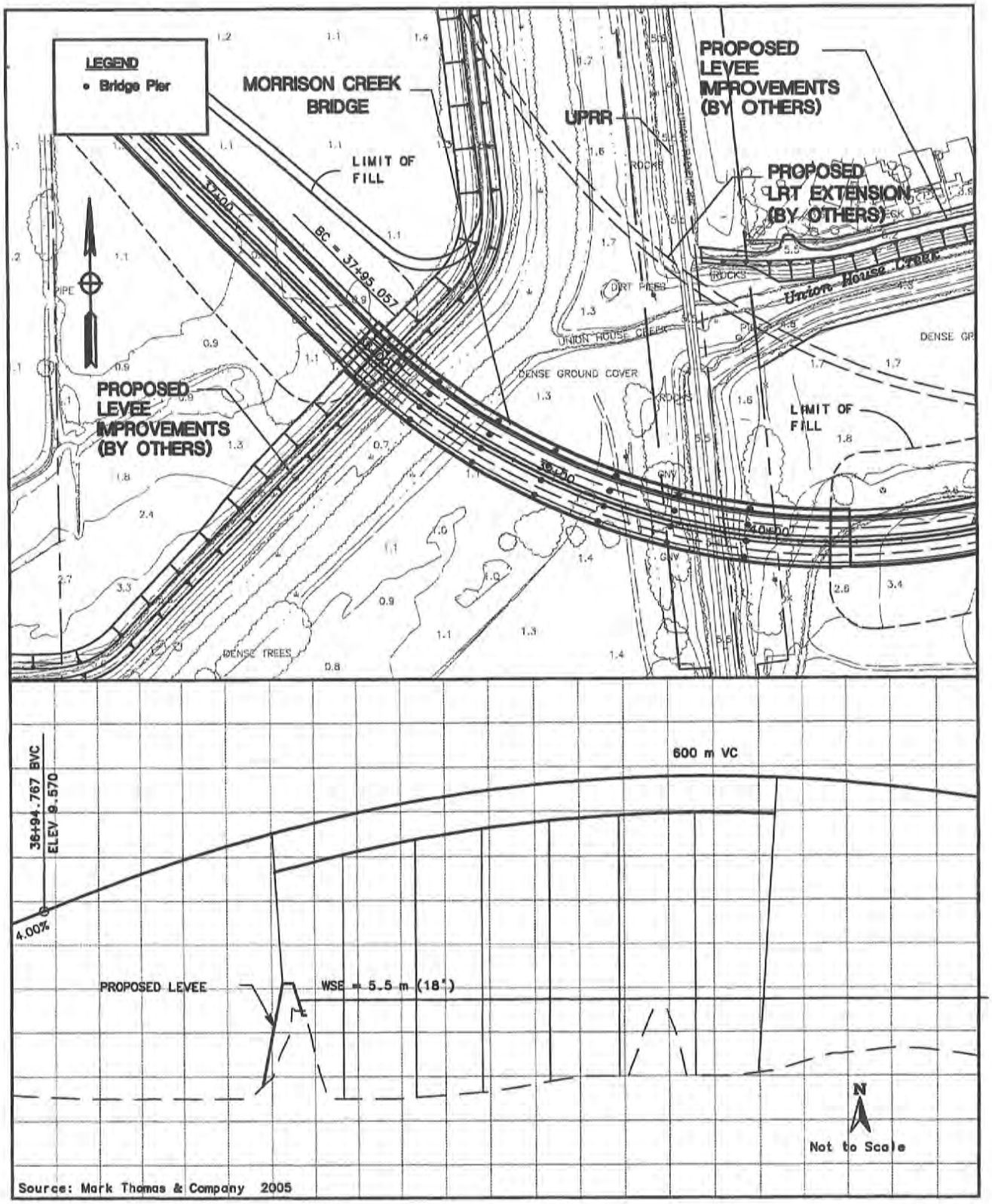


Figure 2-5
Location of Bridge Piers
I-5 / Cosumnes River Boulevard Interchange Project

Interchange Configuration

The proposed I-5 interchange is a Type L-9 partial cloverleaf design that includes the following components and design features (Figure 2-1, "Project Alternatives, Figure 2-2, "Interchange Design and Phasing," and Figure 2-4a, "Design Details").

Overcrossing Structure

The I-5 overcrossing structure would be four lanes with turn lanes provided at the on-ramps and located at approximately the same location as the existing Stonecrest Avenue overcrossing (referred to in Caltrans documents as the "Riverbend Overcrossing"). The existing structure would be removed.

Off-Ramps

There would be two-lane diagonal off-ramps from I-5 in each direction. Each off-ramp would have a 400-m (1,300-ft) deceleration lane. The ramp termini intersections would be signalized.

On-Ramps

Two loop on-ramps to I-5 are proposed with provisions for ramp metering for southbound and northbound movements. Both on-ramps would be two lanes with one of the lanes being a high-occupancy vehicle (HOV) bypass lane. Two diagonal on-ramps to I-5 are proposed with ramp metering for southbound and northbound movements. The northbound ramp would consist of two mixed-flow lanes and one HOV bypass lane. The southbound ramp would consist of one mixed-flow lane and one HOV bypass lane. Acceleration lanes would be provided for these ramps.

Bicycle and Pedestrian Movements

The "standard" Type L-9 partial cloverleaf configuration has been modified to slow vehicular traffic at potential conflict points, thereby allowing for safer crossings by pedestrians and bicyclists. The entrances to the loop on-ramps would be perpendicular to the local cross street (Cosumnes River Boulevard). The entrances to the diagonal on-ramps would be located at the ramp intersection. At the loop and diagonal on-ramp entrances, a separate right-turn/deceleration lane would be provided as needed, with appropriate curb return radii to maintain Surface Transportation Assistance Act (STAA) movements. Pedestrian crossing movements at the diagonal on-ramp would be signalized.

Freeport Boulevard Intersection

The design for both build alternatives includes a "T" connection to Freeport Boulevard, located approximately 400 m (1,300 ft) west of the southbound off-ramp of the proposed interchange. Because of concerns about impacts on the community of Freeport, the lane configuration at the Freeport Boulevard intersection was reviewed in detail with the intent of minimizing capacity enhancements on Freeport Boulevard. The design provides the following: northbound Freeport Boulevard would have a single through lane and a dedicated right-turn lane (northbound to eastbound), southbound Freeport Boulevard would have a combined left-turn/through lane and single dedicated left-turn lane (southbound to eastbound), and Cosumnes River Boulevard would have two eastbound receiving lanes and single dedicated lanes for left turns (southbound) and right turns (northbound).

Franklin Boulevard Intersection

The design for both build alternatives includes constructing the west leg of the existing Cosumnes River Boulevard/Franklin Road intersection to conform to a planned future City project to reconstruct the intersection. Based on the numbers identified in the traffic study for the project, it was determined that the eastbound Cosumnes River Boulevard would have two dedicated left-turn lanes (eastbound to northbound), two through lanes, and a dedicated right-turn lane (eastbound to southbound). These improvements anticipate matching the planned future project to reconstruct the intersection as follows:

- Northbound Franklin Boulevard would be modified to provide two dedicated left-turn lanes (northbound to westbound), two through lanes, plus a dedicated right-turn lane (northbound to eastbound).
- Southbound Franklin Boulevard would be modified to provide a dedicated right-turn lane (southbound to westbound), two through lanes, and two dedicated left-turn lanes (southbound to eastbound).
- Westbound Franklin Boulevard would be modified to provide two through lanes, two dedicated left-turn lanes (westbound to southbound), plus one dedicated right-turn lane.

Roadway Width

Based on traffic forecasts, the extension of Cosumnes River Boulevard is designed to be four lanes between Franklin Boulevard and 24th Street, six lanes between 24th Street and I-5, and four lanes between I-5 and Freeport Boulevard (Figure 2-3, "Typical Cross Sections"). The road would include curb, gutter and sidewalk in both directions on the developable portion of the project corridor; however, once the road is on the land owned by the Sacramento Regional County Sanitation District (SRCSD), the sidewalk would be eliminated on the south side of the road and would continue only on the north side of the road to cross Morrison Creek and the railroad tracks.

Bicycle and Pedestrian Movements

The preliminary design of Cosumnes River Boulevard incorporates the following pedestrian and bicycle features:

- Both sides of the road would include 6-foot-wide separated sidewalks between I-5 and 24th Street.
- Only the north side of the road would include a 6-foot-wide separated sidewalk between 24th Street and Franklin Boulevard; the areas where the road is located on or adjacent to Bufferlands property would be fenced at the request of Bufferlands staff to discourage unauthorized access into this area.
- The Morrison Creek/UPRR bridge would include a combined pedestrian/bicycle pathway on the north side of the structure. The design of this pathway is being coordinated with a future City project to provide a bicycle path along Morrison Creek.

Morrison Creek Bridge and Union Pacific Railroad Line Crossing

To avoid an at-grade crossing of the UPRR line, a grade separation/overhead structure is required. The alignment and profile have been designed to accommodate RT's proposed future light rail extension. The structure would also span Morrison Creek as shown in Figure 2-1, "Project Alternatives," Figure 2-4, "Design Details," and Figure 2-5, "Locations of Bridge Piers." A single structure would be constructed to span the creek and the railroad line. The structure would be constructed on columns—preliminary design indicates that the structure would require six pier lines, each with four 1.7-m-diameter (5.5-ft-diameter) columns for support. The structure would be elevated over 30 feet above adjacent grade where it crosses the creek and railroad line. Some dewatering of Morrison Creek may be required for construction. All areas between Morrison Creek and railroad line would be restored as part of the proposed action.

Phasing and Schedule

Assuming adequate funding is available, it is tentatively assumed that the interchange and extension will be constructed in 2008/2009 and operational in 2010/2011. If funding is constrained, several options for project phasing would be considered. First, Cosumnes River Boulevard could initially be constructed as a two-lane facility that could ultimately be expanded to a four- to six-lane facility. Second, construction of the loop on-ramps at the interchange could be deferred—by constructing spread diamond improvements within the interchange footprint on the east side of I-5 (deferring the loop on-ramps)—and the deferred ramps added later when needed by future traffic (Figure 2-2).

Construction Access

Access to the project site is currently provided from Franklin and Freeport Boulevards. Stonecrest Avenue currently crosses over I-5 at the proposed interchange location, and connects the west and east sides of the project area. The City or its Contractor will ensure that access across I-5 will be maintained throughout the project by phasing construction of the interchange. The south (eastbound) portion of the new interchange overcrossing would be constructed first before the existing Stonecrest Avenue overcrossing is removed. Once the existing overcrossing is removed, traffic would be allowed to utilize the south portion of the new overcrossing during construction of the north portion. SRCSD staff, emergency vehicles, and Park Ranger patrols would have access across I-5 throughout the construction period. Maintaining this access would also provide an avenue of access for the landowner or his/her lessee.

Daytime access to businesses on Freeport Boulevard would be maintained during construction, and at least two lanes of traffic on Franklin and Freeport Boulevards would remain open during construction.

Staging/Laydown Areas

No specific staging/laydown areas have been identified. In sensitive areas, however, staging/laydown activities would be confined to the 61-m-wide (200-ft-wide) project footprint. Any sensitive resources within the footprint will be avoided consistent with regulatory agencies guidelines and requirements, as identified in their approvals and authorizations for the project. Sensitive areas were identified during preparation of the background technical studies for the proposed action and are identified and discussed in this environmental document.

Construction Equipment and Techniques

Excavators, cranes, tandem-trailer dump trucks, pump trucks, paving machines, and rollers would be used during construction. Project design and construction would incorporate standard construction measures and best management practices identified in the background technical studies for the proposed action and discussed in this environmental document.

Construction would last approximately 18–24 months. Construction near the Deerfield subdivision homes would be limited to Monday through Friday, between 7 a.m. and 4 p.m., including equipment activity for deliveries, earthwork, paving, structural fabrication, and similar activities. Maintenance activities and daily staging before equipment use may occur before 7 a.m. or after 4 p.m. Work on the freeway mainline and interchange will be allowed only during off-peak hours; therefore, some nighttime construction would be required for construction of the interchange so as to minimize disruption to traffic on the interstate.

2.2.3 Modal Alternatives

No modal alternatives have been identified that would meet the project purpose and need, or fully satisfy the project objectives.

2.2.4 Transportation Systems Management and Transportation Demand Management Alternatives

Transportation system management 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 transportation system management strategies include ramp metering, auxiliary lanes, turning lanes, reversible lanes, and traffic signal coordination. Transportation demand management 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 or transportation demand strategies alone could not satisfy the purpose and need of need of the project, the following transportation system management measures have been incorporated into the build alternatives for the project: on-ramps would be designed to accommodate ramp metering, high occupancy vehicle lanes, and California Highway Patrol enforcement areas.

In addition, the City will be considering a transportation demand strategy, the placement of a park-and-ride facility in the project area at such time as development is proposed.

2.3 Alternatives Considered but Eliminated from Further Discussion

Various alternatives were considered and subsequently withdrawn from further consideration during the course of the engineering studies. These alternatives and the reasons they were withdrawn from further consideration are summarized in the following subsection.

2.3.1 Interchange Locational Alternatives

At the commencement of the project, the City considered various interchange locational alternatives; however, existing physical constraints in the project area that restrict the location of the interchange include the Beach Lake/Morrison Creek floodplain, an existing GTE Data Services building, and the Bartley Cavanaugh public golf course. In addition, any new interchange would be required to satisfy Caltrans' requirements stated in a publication entitled "Design Information Bulletin Number 77," which states that the minimum spacing between interchanges shall be 1.5 km (0.9 mi) in urban areas (the project area is considered an "urban" area).

After the interchange location was identified, the City and FHWA considered several roadway alignments that would meet the project purpose and need while minimizing impacts on environmental resources. The roadway alignments were discussed with representatives of the major landowners and the Sacramento Regional County Sanitation District and other agencies developing projects in the project area (Sacramento Area Flood Control Agency, Sacramento Regional Transit District, and the Freeport Regional Water Authority). The following criteria were used to identify the two build alternatives discussed in detail in this report:

- Minimize impacts on Morrison Creek, wetlands, and other sensitive biological resources
- Minimize impacts on the Sacramento Regional County Sanitation District Bufferlands
- Serve development of the project area as identified in the City of Sacramento General Plan
- Minimize right of way impacts on any one landowner

After the two build alternatives were identified, they were presented to the public and resource agencies in the Notice of Preparation of an EIR and the Notice of Intent to prepare an EIS. The alignments were also presented at several public meetings/open houses. No objections were raised with respect to these alignments and no other alignments were identified or suggested. In addition, no significant differences between the two alignments were identified during preparation of the technical studies or draft environmental document.

The interchange is located at kilometer post (KP) 24.0 (post mile [PM] 14.9). The spacing between the two adjacent interchanges, Laguna Boulevard to the south (KP 19.4/PM 12.03) and Pocket Road/ Meadowview Road to the north (KP 26/PM 16.15), is 6.6 km (4.12 miles). The interchange location was selected to minimize conflicts with existing uses in the project area (the Beach Lake/Morrison Creek floodplain and the Bartley Cavanaugh public golf course to the south and the GTE Data Services building on the north).

2.3.2 Road Design Alternative: No Connection to Freeport Boulevard

Early in the preliminary design phase, the City and FHWA considered a road design alternative under which Cosumnes River Boulevard would have been extended from Franklin Boulevard to a new interchange with I-5, but would not connect to Freeport Boulevard. This alternative was suggested by several members of the design team, as well as by several people during the scoping phase. These individuals expressed concern that connecting Cosumnes River Boulevard to Freeport Boulevard could increase traffic volumes in the community of Freeport, thereby

increasing noise and possibly degrading community identity. The public benefits for providing this connection; however, would include improved access for public safety, and improved roadway levels of service (LOS) in the project area and Meadowview Road corridor.

The no-connection alternative was ultimately withdrawn from further consideration for the following reasons:

- Connecting to Freeport Boulevard would improve emergency access to the Freeport community.
- The City has designated the land west of I-5 as appropriate for urban development. Without providing a connection to I-5, the traffic generated from future development would be required to access I-5 through use of the Pocket Road/Meadowview Road interchange, thereby resulting in increased impacts at this interchange. Additionally, with limited points of ingress/egress, public safety and associated response times would be a concern.
- The distance between I-5 and Freeport Boulevard is considered so small that even if the connection was not made initially, it was considered likely that the connection would be made in the future.

2.3.3 Phasing Alternatives

Assuming adequate funding is available, it is tentatively assumed that the interchange and extension would be operational in 2010/2011. Under the assumption that funding is constrained, several options for phasing were considered, including deferring certain interchange ramps, constructing two lanes initially to Franklin Boulevard, and deferring construction of the Cosumnes River Boulevard extension east of 24th Street.

2.4 Funding and Programming

The City is funding the project planning activities through preparation of the EIS/EIR using local funds. The proposed action is included in the City of Sacramento General Plan (City of Sacramento 1988, as amended through 2000). Design of the project is also included in the 2003/2005 Sacramento Metropolitan Transportation Improvement Plan (MTIP) (Sacramento Council of Governments 2002a) and the 2025 Sacramento Metropolitan Transportation Plan (MTP) (Sacramento Council of Governments 2002b). The project is also included in the 2004 State Transportation Improvement Program and the 2002/2005 Federal Transportation Improvement Program.

Chapter 3 Affected Environment, Environmental Consequences, and Mitigation Measures

3.1 Introduction

The purpose of this introduction is to describe the organization and approach for this joint federal/state document (EIS/EIR) on the proposed action. This EIS/EIR has been prepared to comply with the requirements of CEQA (Public Resources Code [PRC] 21000 et seq.) and NEPA. FHWA is the federal lead agency under NEPA with Caltrans acting as liaison and providing oversight for the NEPA process, and City is acting as state lead agency. This EIS/EIR has been prepared based on the State CEQA Guidelines (14 California Code of Regulations [CCR] 14000 et seq.); Council on Environmental Quality (CEQ) NEPA regulations (40 Code of Federal Regulations [CFR] 1500 to 1508); and the U.S. Department of Transportation's Environmental Impact and Related Procedures (23 CFR 771). The intent of the preparers of this joint document is to provide the readers with a clear description of the environmental analysis conducted for this proposed action within the framework of applicable regulations.

3.1.1 Approach for Joint NEPA/CEQA Document

FHWA and Caltrans are overseeing the preparation of an EIS under NEPA for the proposed action because it has determined that the whole of the proposed action may result in a significant effect on the quality of the human environment. The City has determined that the appropriate level of CEQA environmental documentation is an EIR because the proposed action (project) may have a significant effect on the environment.

One of the primary differences between NEPA and CEQA is the way significance is determined and later discussed in environmental documents. Under NEPA, significance is used to determine whether an EIS or lower level of documentation will be required. NEPA requires that an EIS is prepared when the proposed action *as a whole* has the potential to "significantly affect the quality of the human environment." This determination is based on context and intensity. Some impacts determined significant under CEQA may not be of sufficient magnitude to be determined significant under NEPA. Under NEPA, once a decision to complete an EIS is made, it is the magnitude of the impact that is evaluated, and no judgment of its significance is deemed important for the text. NEPA does not require that a determination of significant impacts be stated in the environmental documents. (California Department of Transportation 2003a.)

The NEPA and CEQA evaluations for this joint document are contained in separate chapters (Chapter 3 and 4, respectively, as described in more detail below). For the purpose of the impact discussions in this document, significance conclusions are provided in the context of CEQA only. These conclusions are presented in Chapter 4.

3.1.2 Overview and Terminology of Impacts and Mitigation Measures

As provided in Caltrans' Streamlined EIS/EIR Outline (California Department of Transportation 2003b), impacts are identified as permanent, temporary, direct, or indirect effects. The terms "effects" and "impacts" are synonymous. Effects include ecological, aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions that may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial (40 CFR § 1508.8). For the purposes of this analysis, these terms are defined as follows.

- *Permanent impacts* are irreversible changes and changes that would occur from operation of the proposed action.
- *Temporary impacts* would occur only during the construction period of the proposed action.
- *Direct impacts* would occur within the project footprint or temporary construction areas. Direct impacts are caused by the proposed action and occur at the same time and place (40 CFR 1508.8).
- *Indirect impacts* would be caused by the proposed action and would occur later in time or farther removed in distance, but would still be reasonably foreseeable. Indirect impacts may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems (40 CFR 1508.8).
- *Cumulative impacts*, according to the Council on Environmental Quality (CEQ) NEPA regulations, would occur as a result of the incremental impact of the proposed action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).

  According to the State CEQA Guidelines Section 15355, cumulative impacts refers to two or more individual effects, which, when considered together, are considerable or which compound or increase other environmental impacts. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.

3.2 Land Use

The information below is summarized from the community impact assessment (CIA) and relocation impact statement (RIS) prepared for the proposed action (Jones & Stokes 2003a). These reports are available for review at the City offices. (The RIS is an appendix in the CIA report.) This section addresses land use issues in the project area.

3.2.1 Regulatory Setting

Local Regulations

Land use planning in the region is governed by the City of Sacramento General Plan (City of Sacramento 1988, as amended through 2000), Airport-Meadowview Community Plan (City of Sacramento 1984), Sacramento County General Plan (County of Sacramento 1993), and Bufferlands Master Plan (Sacramento Regional County Sanitation District 2000). Regional transportation planning for the area is conducted by the Sacramento Area Council of Governments (SACOG), which recently approved the MTP for 2025. The proposed action is included in the City of Sacramento General Plan and MTP, and design of the project is included in the MTIP and STIP.

City of Sacramento General Plan

The City of Sacramento General Plan is a 20-year policy guide for physical, economic, and environmental growth and renewal of Sacramento. The City of Sacramento General Plan is composed of goals, objectives, and policies that guide growth and development in areas under City jurisdiction, including most of the project area.

The project area is identified as a "new growth area" in the City of Sacramento General Plan (Figure 3.2-1). As stated on page 1-17 of the plan, the community's potential growth is mostly associated with the Delta Shores proposal and residential infill. Eleven hundred housing units can be accommodated in the areas designated for infill development. Housing construction will also occur along the community's southern fringe in the Delta Shores area. Delta Shores is designed as a master planned development integrating residential, commercial, office, and research-oriented uses. An important feature of the development proposal is the creation of new employment opportunities for the community's unemployed and low-skilled workers. The project area is identified as an area of opportunity for development on Map 5, Areas of Opportunity for Development or Reuse, on page 1-24 of the City of Sacramento General Plan Update EIR (City of Sacramento 1987).

Relevant goals contained in the City of Sacramento General Plan are listed below.

> **Circulation Goal A:** Create a safe, efficient surface transportation network for the movement of people and goods.
>
> **Circulation Goal B:** Provide all citizens in all communities of the City with access to a transportation network which serves both the City and region, either by personal vehicle or transit. Make a special effort to maximize alternatives to single-occupant vehicle use, such as public transit.

Circulation Goal C: Maintain a desirable quality of life, including good air quality while supporting planned land use and population growth.

Airport-Meadowview Community Plan

The project area is located within the Airport-Meadowview Community Plan area. The Airport-Meadowview Community Plan, currently being updated, generally supports the development of the vacant lands in the project area and the development of transportation infrastructure to accommodate increased traffic in the area. The following policies relate specifically to the proposed action.

Policies and Actions C.1.c. Preserve the right-of-way and complete specifications for the proposed Arterial 148.

Policies and Actions C.1.e. Require at least one I-5 interchange to accommodate projected traffic into the proposed high technology industrial area.

Policies and Actions C.1.j.g. The River Bend interchange serving Delta Shores Village will require two lanes for northbound on and southbound off movement.

Sacramento County General Plan

The Sacramento County General Plan contains goals, objectives, and policies that guide growth and development in areas under County jurisdiction. The project area includes some unincorporated county land in Freeport and the SRCSD Bufferlands. Relevant goals and policies contained in the Sacramento County General Plan are listed below.

Transportation Goal: A balanced transportation system that moves people and goods in a safe and efficient way, that minimizes environmental impacts, that is supported by urban land uses, and that serves rural needs.

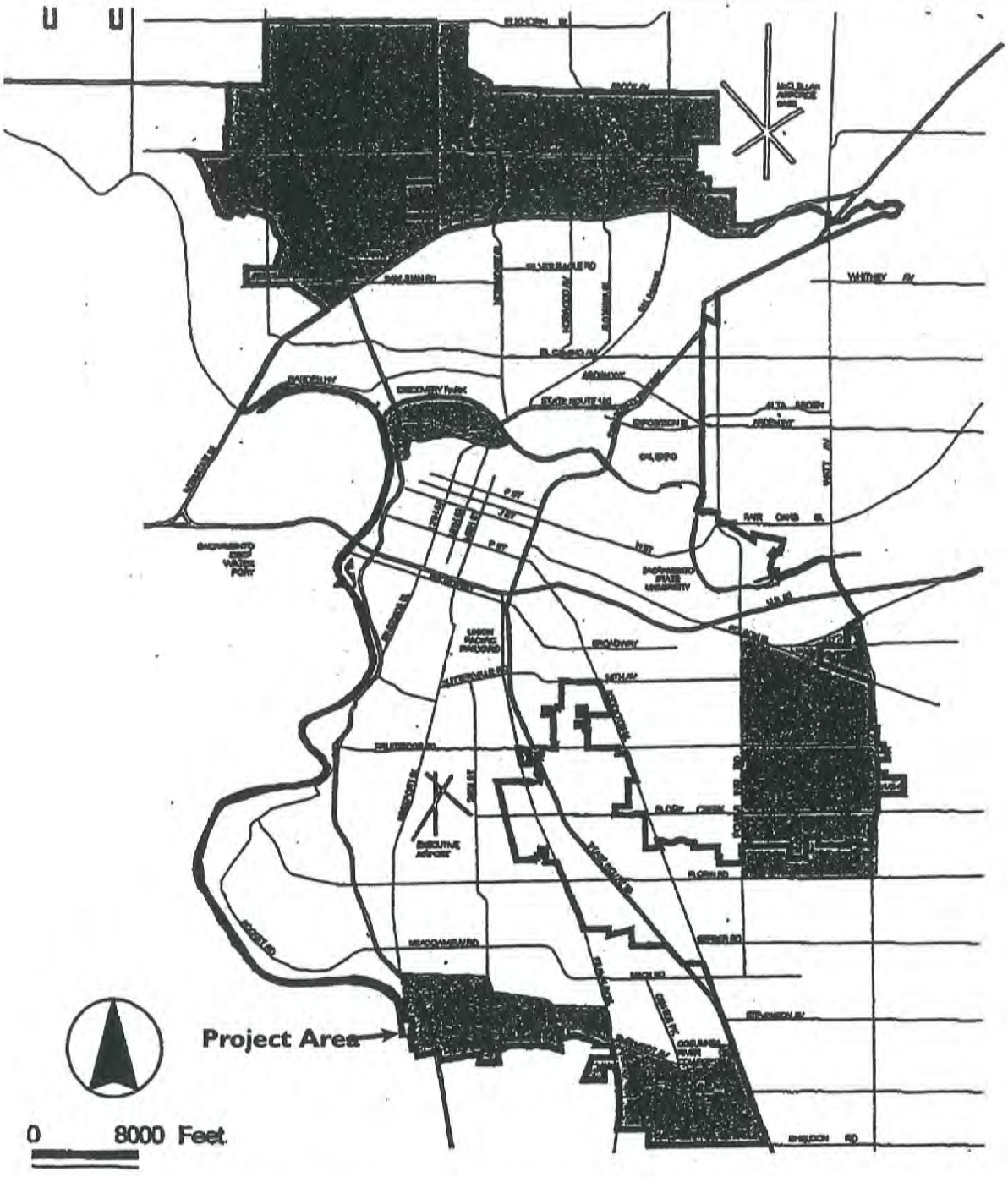
Transportation Policy CI-1: Sacramento County shall conduct planning for road, parking, clean alternative fuel and low-emission vehicles, transit, clean intercity rail, bikeway, and pedestrian facilities in a manner that is consistent with achieving air quality goals.

Transportation Policy CI-16: Sacramento County shall implement a program to buffer land uses from each other and transportation system facilities which is effective, aesthetically pleasing, and will minimize the amount of land lost to buffers.

Land Use Policy LU-59: Expansion of urban uses in rural areas shall be limited to the established Delta communities of Freeport, Hood, Courtland, Locke, and Walnut Grove and to specific small expansions which support the agriculturally and recreationally based economies of the Delta.

Bufferlands Master Plan

The SRCSD Bufferlands are open space lands surrounding the SRWTP. The approximately 1,011.7-ha (2,500-ac) SRCSD Bufferlands were acquired in the 1970s by SRCSD to provide a buffer between the newly constructed SRWTP and the neighboring community, and to provide an area for future expansion of the SRWTP. The Bufferlands Master Plan was prepared as part of the SRWTP 2020 Master Plan to establish a long-term, cost-effective management direction for the SRCSD Bufferlands. It provides guidance to SRCSD staff for maintaining a buffer zone



NEW GROWTH AREAS

1993

City of Sacramento
GP
GENERAL PLAN

(Amended 12/14/93 by Resolution 93-740)

Figure 3.2-1
City of Sacramento New Growth Areas

surrounding the SRWTP, and for protecting and enhancing the area's environmental resources. The following goals and policies of the Bufferlands Master Plan apply specifically to the proposed action. (SRCSD is referred to as "the District" in the policies below.)

General Land Use Goal: To prevent land use conflicts and promote beneficial relationships between the plant and adjacent landowners.

General Land Use Policies:

- The District shall ensure that future uses of the Bufferlands are consistent with this master plan.
- The District shall ensure that future uses of the Bufferlands are consistent with city and county general plans and zoning ordinances.
- The District shall ensure that future uses would not constrain operation or expansion of the plant in any way.
- The District shall minimize the introduction of permanent structures on the Bufferlands.
- The District shall ensure that future land uses along the Bufferlands boundary are compatible with existing or proposed residential development.
- The District shall ensure that grading, excavation, or any other construction activities in areas with existing easements are consistent with the easement descriptions.
- The District shall discourage grading, excavation, the addition of structures, construction, or any permanent changes in land use in areas containing major utilities or infrastructure (i.e., underground pipelines).

3.2.2 Affected Environment

Existing Land Uses

The project area is surrounded by urbanized uses (Figure 3.2-2). The town of Freeport is located to the west of the project area and is proposed to be annexed into the City of Sacramento. The City Council approved the annexation in April 2004. LAFCO also approved the annexation; however, a protest has been filed and therefore the annexation is under review. The Sacramento Regional County Sanitation District (SRCSD) facility is located directly to the south, as is the City of Elk Grove. Residential uses are located to the north and east of the area. The City of Sacramento constructed a flood control detention basin located directly north of the project alignment near Union House Creek to minimize localized flooding in the residential area. The North Delta Shores single-family residential project, consisting of approximately 500 residences on 117 vacant acres, was approved approximately 2 years ago and is located north of the project area; this project is currently in construction.

Drainage and sewer facilities, including sewer and drainage pipelines, manholes, drainage inlets, and drainage and sewer pump stations, to serve the project area and vicinity were constructed in the 1960s. The alignments of these existing facilities followed the roadways that were proposed for the area at the time of infrastructure construction.

Major landowners along the project alignment and in surrounding area include SRCSD, Caltrans, M&H Realty, Stone Family Trust, and UPRR. The amount of land owned by each is shown in Table 3.2-1.

Table 3.2-1. Land Ownership in the Project Vicinity

Owner	Area	
	Hectares	Acres
M&H Realty	322.1	796.0
Sacramento Regional County Sanitation District	134.7	332.9
Stone Family Trust	51.6	127.5
California Department of Transportation	15.3	37.9
Union Pacific Railroad	4.1	10.2

Source: Mark Thomas & Company 2002.

Land uses along and close to the alignments consist primarily of agricultural lands and vacant open-space grasslands. The SRCSD Bufferlands are located directly south of the alignments. Primarily urban land uses border the project area, including residential, commercial, industrial, park/open space, and public/institutional lands. The existing land uses are residential development and the Sacramento River and levee system on the west; SRCSD property and the Bartley Cavanaugh Golf Course on the south; and Union House Creek, the Sacramento Job Corps property, and residential development on the north and east. Morrison Creek, Union House Creek, and several agricultural canals traverse portions of the region. A UPRR line crosses the area from north to south. Current land use designations and zoning are shown in Figures 3.2-3 and 3.2-4.

Planned Land Uses

As noted above, the City of Sacramento General Plan identifies land in the project area and much of the adjacent land to the north and southwest as a new growth area. Most of the potential growth is associated with the Delta Shores development, which is anticipated to be as a master planned development integrating residential, commercial, office, and research-oriented uses. The areas adjacent to I-5 on both sides of the freeway are generally designated for commercial uses. A few vacant parcels on the east side of Freeport Boulevard north of Stonecrest Avenue are also designated for commercial use. The eastern half of the project area is generally designated for low-density residential uses north of the alternative alignments, industrial uses to the north-west and southwest, and open space to the south.

3.2.3 Impacts

No land use impacts have been identified.

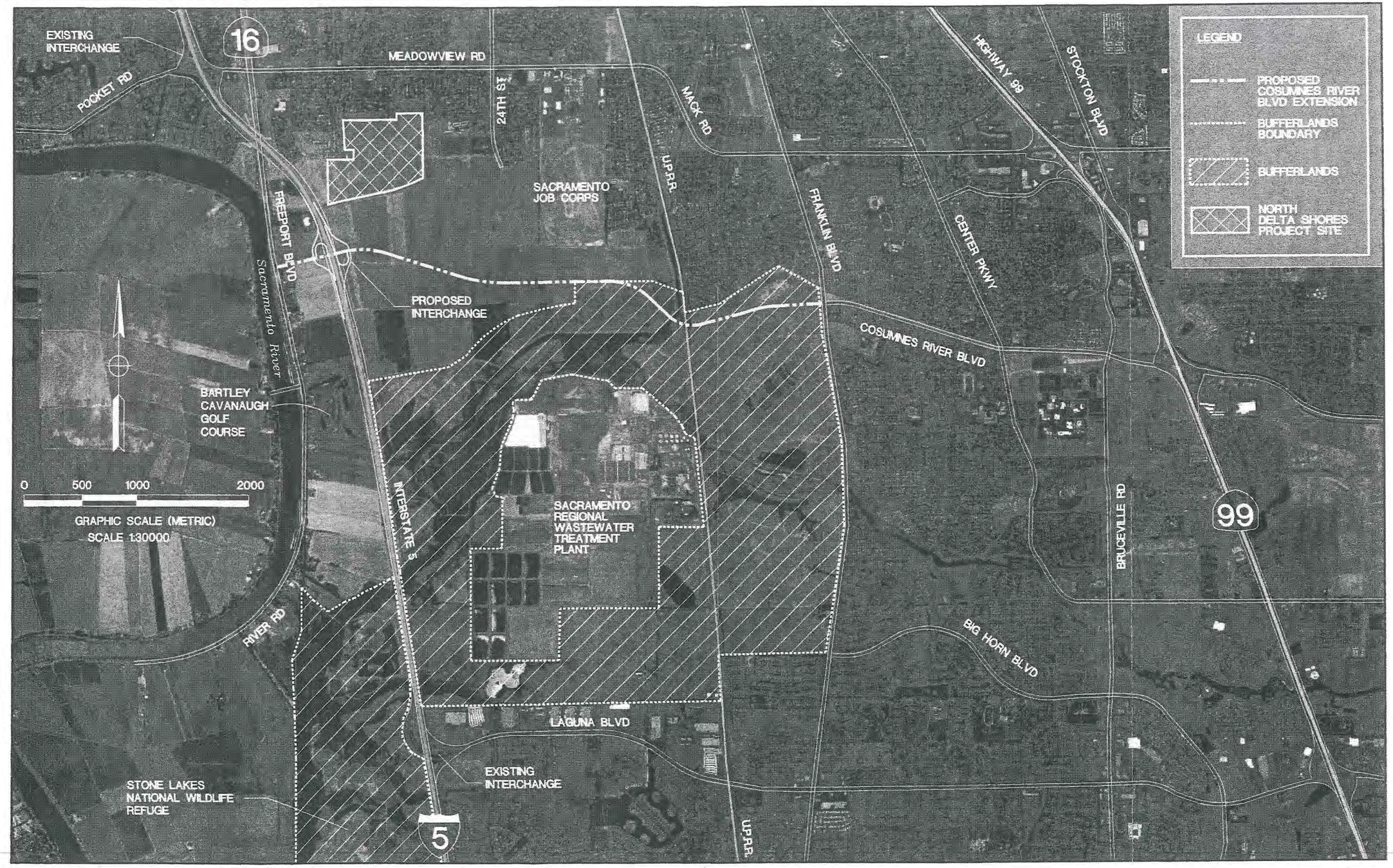
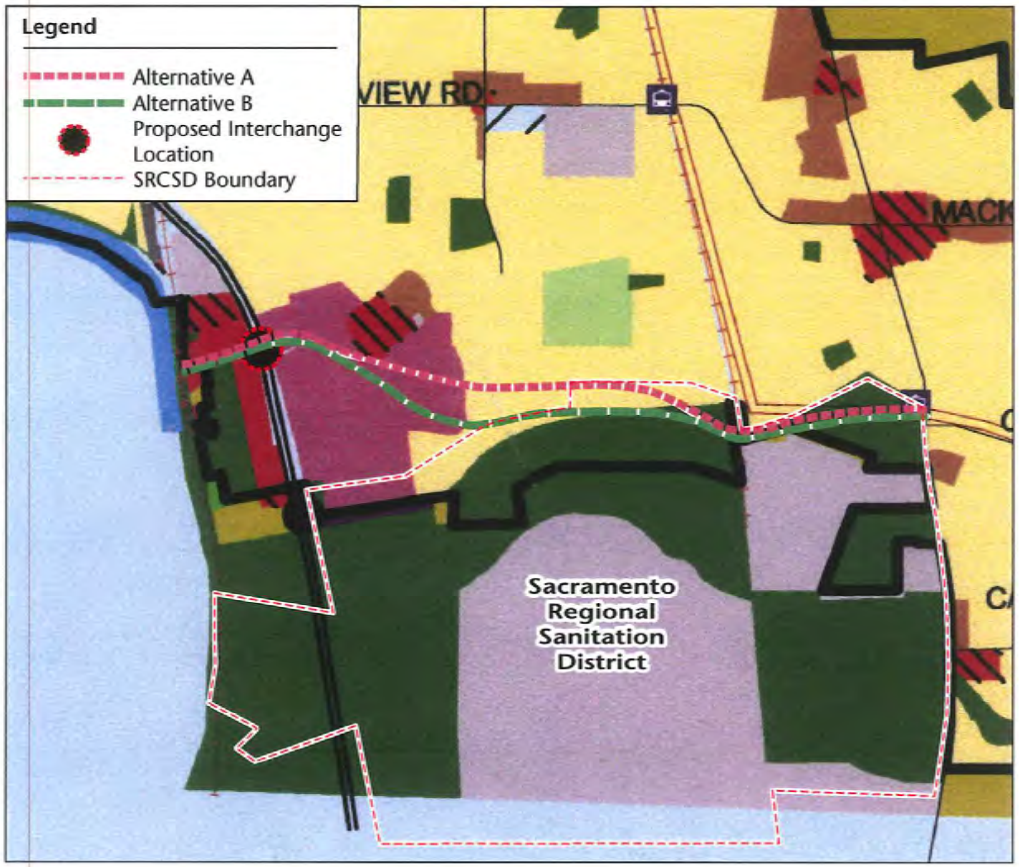


Figure 3.2-2
Land Uses in Project Vicinity
I-5/Cosumnes River Boulevard Interchange Project

01120.01



Source: City of Sacramento General Plan Map, Amended December 12, 2000.

Commercial
- Regional Commercial & Offices
- Community/Neighborhood Commercial & Offices
- Heavy Commercial or Warehouse
- Industrial
- Industrial-Employee Intensive
- Mixed-Use

Residential
- High Density Residential 30+ du/na
- Medium Density Residential 16-29 du/na
- Low Density Residential 4-15 du/na
- Mixed Residential (County Portion)
- Residential Mixed Use
- Rural Estates

Other
- Parks-Recreation-Open Space
- Public Offices
- Public/Quasi-Public-Miscellaneous
- Agriculture
- Transportation/Utilities
- Special Planning District
- Water

N

0 2,000 4,000 8,000
Feet

- Interstates
- Major Streets
- Heavy Rail
- Light Rail (Existing)
- Light Rail (Proposed)
- Light Rail Stations (Existing)
- Light Rail Stations (Proposed)

- City Limits
- Rivers / Lakes
- Colleges / Universities
- Proposed Interchange
- Interchange (Half)
- Interchange

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01120.01 EIS/EIR (01/04)

Figure 3.2-3
City of Sacramento General Plan Land Uses

3.3 Growth

Project History: The proposed project was originally adopted by the City of Sacramento in 1981 as an extension of State Route 148 (under Caltrans) to connect I-5 and SR 99. The purpose of extending the arterial now known as Cosumnes River Boulevard was to facilitate access to the project area, which was anticipated to develop in the future in the City of Sacramento General Plan. A mixed-use development was approved by the City in the 1980s, but never constructed. The area west of I-5 in the project area is zoned for industrial and commercial uses. The proposed extension and alignment is identified in the City of Sacramento General Plan.

Existing Development in the Area: The project area is surrounded by urbanized uses. The town of Freeport is located to the west of the project area and is proposed to be annexed into the City of Sacramento. The Sacramento County Regional Sanitation facility is located directly to the south as is the City of Elk Grove. Residential uses are located to the north and east of the area. The City of Sacramento constructed a flood control detention basin located directly north of the project alignment near Union House Creek to minimize localized flooding in the residential area. The North Delta Shores single family residential project consisting of approximately 500 residences on 117 vacant acres was approved several years ago and is located to the north of the project area.

General Plan Policies: The project area is identified as a "new growth area" in the City of Sacramento General Plan. The project area is located within the Airport-Meadowview Community Plan. As stated on page 1-17 of the plan, the community's potential growth is mostly associated with the Delta Shores proposal and residential infill. Eleven hundred housing units can be accommodated in the areas designated for infill development. Housing construction will also occur along the community's southern fringe in the Delta Shores area. Delta Shores is designed as a master planned development integrating residential, commercial, office, and research-oriented uses. An important feature of the proposal is the creation of new employment opportunities for the community's unemployed and low-skilled workers. The project area is identified as an area of opportunity for development on Map 5, Areas of Opportunity for Development or Reuse, on page 1-24 of the Sacramento General Plan Update EIR (City of Sacramento 1987).

In summary, development of the project area with urban uses has been analyzed, planned for, and supported by policy in the City of Sacramento General Plan and the Airport-Meadowview Community Plan for more than 20 years. The proposed Cosumnes River Boulevard Extension has been approved for more than 20 years to support planned growth in the area and will not stimulate growth beyond what was already anticipated by the City of Sacramento.

The information below is summarized from the CIA/RIS prepared for the proposed action (Jones & Stokes 2003a). These reports are available for review at City offices. This section addresses issues related to growth in the project area.

Growth rates and patterns are influenced by various local, regional, and national forces that reflect ongoing social, economic, and technological changes. The amount and location of population growth and economic development that occurs in a specific area is controlled, to

some extent, by local and county governments through zoning, land use plans, policies, and decisions regarding development applications. Local governments and other regional, state, and federal agencies also make decisions about infrastructure (e.g., roads, water facilities, and wastewater facilities) that may influence growth rates and the location of future development.

As discussed in Section 3.2, "Land Use," and shown in Figure 3.2-2, the project area and vicinity are surrounded by urban development and infrastructure, and development of the project area with urban uses has been analyzed, planned for, and supported by policy in the City of Sacramento General Plan and the Airport-Meadowview Community Plan for more than 20 years.

Transportation infrastructure is one component of the overall infrastructure that may serve planned growth. This infrastructure also may hasten or shift planned growth, or encourage and intensify unplanned growth in an area. Transportation projects may induce growth when they directly or indirectly promote, hasten, shift, or intensify planned growth or encourage unplanned growth in a community or region. Examples of growth-inducing transportation projects are construction of a new interchange on an existing freeway, which could shift and encourage growth in the vicinity of the new interchange, and construction of a new roadway through an undeveloped area, which could promote unplanned growth.

3.3.1 Regulatory Setting

Local Regulations

The City of Sacramento General Plan and Airport-Meadowview Community Plan contain growth policies for the incorporated areas in the project area. The project area and adjacent lands are within the City's sphere of influence, as established by the Sacramento LAFCO, and the City of Sacramento General Plan identifies them as a "new growth area." Both plans encourage development of commercial, industrial, and residential use in the project area as part of the Delta Shores development.

The Sacramento County General Plan and Bufferlands Master Plan contain growth policies for unincorporated county lands in the project area. The project area and adjacent lands to the north are within the County's designated urban development area. Lands generally to the south of the alternative alignments and lands within the SRCSD Bufferlands are outside the urban area. Both plans prohibit development in the SRCSD Bufferlands.

The City has initiated annexation of the unincorporated community of Freeport in response to petitions submitted by 75% of the registered voters in the community. The intents of the City and petitioners are listed below.

- Allow the community to work with the City to establish development standards and permitted/prohibited uses for maintaining the historic Delta River Town theme and prevent the intrusion of inappropriate land uses.
- Eliminate an irregular boundary and isolated unincorporated peninsula on the westerly side of I-5, within the City's sphere of influence.
- Assist property owners and residents that want to annex to the City consistent with the City's annexation policy.

- Facilitate provision of municipal services to the City's Bartley Cavanaugh Golf Course and to improve the level of existing services to the town of Freeport.

LAFCO approved the annexation, but a protest has been filed and therefore the annexation is under review.

3.3.2 Affected Environment

The project area extends along an east-west corridor between Freeport and Franklin Boulevards through undeveloped land in the southern part of Sacramento. The project area covers predominantly agricultural land uses, and a considerable amount of vacant land is located on the western edge of the project area. Freeport includes a mix of commercial and residential land uses that are located adjacent to Freeport Boulevard. Freeport is bounded on the west by UPRR tracks and Sacramento River, and on the east by agricultural fields. The area south of the project area is managed by SRCSD as a buffer between existing and proposed development and the SRWTP.

3.3.3 Impacts

Approach and Methodology

The analysis of effects related to growth was based on a qualitative assessment that included evaluating the compatibility and consistency of the alternatives with applicable plans, programs, and policies described in section 3.2, "Land Use."

Build Alternative A: Franklin to Freeport North Alignment

Impact G-1: Induce Growth in Sacramento, Freeport, or Unincorporated Sacramento County

This alternative would improve circulation between SR 99 and I-5, improve access to I-5 from Freeport, and improve accessibility to developable land in southern Sacramento and the City's sphere of influence. By substantially improving access to the freeway system, this alternative would accommodate planned growth in the industrially zoned area adjacent to I-5 and in residentially zoned area in the center of the project area. This alternative does not provide capacity beyond that needed to accommodate planned growth consistent with the City and County general plans. Therefore, it would not induce unplanned growth either directly or indirectly.

Future growth in the project area between Franklin Boulevard and Freeport Boulevard that would be indirectly accommodated by this alternative would be subject to growth controls maintained by the City. Zoning changes, tentative subdivision maps, and other zoning approvals, which would involve environmental documentation, public notification and involvement, mitigation, and approval by local agencies, would be required to accommodate such growth. This accommodation of the planned growth of the community would be an indirect, permanent effect. However, because the project area has long been identified for future urbanization, the City has planned for accommodating the resulting public services, utilities, and infrastructure needs.

Build Alternative B: Franklin to Freeport South Alignment

Impact G-1: Induce Growth in Sacramento, Freeport, or Unincorporated Sacramento County

This impact under this alternative would be the same as that discussed above for Build Alternative A.

No-Build Alternative (No Project)

This alternative would not result in growth-inducement effects. The southwest area of Sacramento has been identified as a potential growth area by the City for more than 20 years, but development has not yet occurred. Planned growth likely would occur eventually if this alternative is selected, but without the impetus of freeway access.

3.3.4 Avoidance, Minimization and Mitigation Measures

No measures have been identified.

3.3.5 Cumulative Impacts

The southeastern tier of Sacramento north of the SRCSD Bufferlands has long been proposed for development. The proposed action has been identified in the City of Sacramento General Plan and Airport-Meadowview Community Plan and would contribute incrementally to the cumulative land use impacts identified in the City of Sacramento General Plan Update EIR (City of Sacramento 1987). However, because the project area has long been identified for future urbanization, the City has planned for accommodating the resulting public services, utilities, and infrastructure needs.

3.4 Farmlands and Agriculture

The information below is summarized from the CIA/RIS prepared for the proposed action (Jones & Stokes 2003a). These reports are available for review at City offices. This section addresses farmlands and agricultural uses in the project area.

3.4.1 Regulatory Setting

Federal Requirements

Farmland Protection Policy Act

The Farmland Protection Policy Act (FPPA) is intended to minimize the impact that federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. It ensures that, to the extent possible, federal programs are administered to be compatible with state and local units of government, and private programs and policies to protect farmland. Federal agencies are required to develop and review their policies and procedures to implement the FPPA every 2 years.

For the purpose of the FPPA, farmland includes prime farmland, unique farmland, and land of statewide or local importance. Farmland subject to FPPA requirements does not need to be currently used for cropland (it can be forest land, pastureland, cropland, or other land), but it cannot be water or urban built-up land. Prime farmland is defined as land with the best combination of physical and chemical characteristics able to sustain long-term production of agricultural crops (U.S. Soil Conservation Service 1993).

On April 30, 1999, Thomas A. Weber, the deputy chief for programs, made an official decision to suspend the requirement to make determinations of farmland as prime, unique, or of statewide or local importance for lands that have already been committed to development through local actions, including the commitment of funds for utilities, water lines, and road replacement and widening. In addition, land that is the "last farm…in town" does not necessarily fit the definition of farmland as defined in the FPPA. As a result, farmland in the above situations does not fit the definition of farmland as defined in the FPPA implementing regulations and can be exempt from the requirement to make a determination of farmland importance (Weber 1999).

State Regulations

California Farmland Mapping and Monitoring Program

The goal of California's Farmland Mapping and Monitoring Program (FMMP) is to provide consistent and impartial data to decision makers for use in assessing present status, reviewing trends, and planning for the future of California's agricultural land resources. FMMP produces Important Farmland Maps, which are a hybrid of resource quality (soils) and land use information. Data is also released in statistical formats, principally the biennial California Farmland Conversion Report.

California Land Conservation Act of 1965 (Williamson Act)

The purpose of the California Land Conservation Act of 1965 (California Government Code [CGC] 51200–51295), commonly known as the Williamson Act, is to provide incentives, through reduced property taxes, to deter the early conversion of agricultural and open space

lands. In return for the preferential tax rate, the landowner is required to sign a contract with the county or city agreeing not to develop the land for a minimum 10-year period. Contracts are automatically renewed annually unless a party to the contract files for nonrenewal or petitions for cancellation. All lands defined by the state as *prime farmland*, *other than prime farmland*, and *open space land* are eligible for coverage by a Williamson Act contract. Land classified as other than prime farmland or open space land can be placed under contract if it is located in an area designated by the county or city as an agricultural preserve. Permissible land uses under Williamson Act contracts are governed by CGC 51238.1. Each city and county has the discretion to determine land uses that are or are not compatible with Williamson Act contracts, provided these uses are not prohibited under the act. The California Department of Conservation (DOC) estimates that more than half of the state's irrigated farmland, mostly prime farmland, is protected by the act.

Local Regulations

Sacramento County General Plan

The Sacramento County General Plan (Sacramento County 1997) contains goals, objectives, and policies that guide growth and development in areas under County jurisdiction. The project area includes some unincorporated county land in Freeport and the SRCSD Bufferlands. Relevant goals and policies contained in the Sacramento County General Plan are listed below.

> **Goal**: Protect important farmlands from conversion and encroachment and conserve agricultural resources.
>
> **Policy AG-1:** The County shall protect prime farmlands and lands with intensive agricultural investments from urban encroachments.
>
> **Policy AG-5:** Mitigate loss of prime farmlands or lands with intensive agricultural investments through CEQA requirements to provide in-kind protection of nearby farmland.

No city plans and policies apply to the proposed action.

3.4.2 Affected Environment

In 2000, Sacramento County contained an estimated 46,990.6 ha (116,116 ac) of prime farmland, 29.3% of the county's agricultural land and 18.3% of its total land base. Both figures represent declines of approximately 1% from 1998 (California Department of Conservation 2002). FMMP-designated farmland of statewide importance, farmland of local importance, unique farmland, and grazing land also are located within the project area. Although these lands do not qualify as prime farmland, they are used for production of the state's major crops, such as fruits and vegetables, or are lands that currently support confined or grazing livestock. The county contains 25,353.6 ha (62,650 ac) of farmland of statewide importance, 6,316.7 ha (15,609 ac) of unique farmland, and 16,084.3 ha (39,745 ac) of farmland of local importance (California Department of Conservation 2002). No lands within the project area are subject to Williamson Act contracts. The value of agricultural production for the entire Sacramento County area is $294,960,000 (Sacramento County Department of Agriculture 2002).

3.4.3 Impacts

Approach and Methodology

The analysis of effects related to farmlands and agriculture was based on the CIA/RIS for the proposed action (Jones & Stokes 2003a), which assumed a maximum 61-m-wide (200-ft-wide) corridor for construction of the proposed interchange, Cosumnes River Boulevard intersections with Freeport and Franklin Boulevards, new roadway, and embankment. Direct effects include areas of the proposed roadway and associated right-of-way. Indirect effects include areas that can no longer be farmed because of problems with access or because the remaining portion of a parcel is too small to farm. Other indirect effects can include damage to the local agricultural economy or to the agricultural infrastructure in the area and introduction of incompatible uses (urban uses). Table 3.4-1 indicates the amount of prime, unique, statewide, and local important farmland that would be affected by the proposed action, both directly and indirectly.

Table 3.4-1. Quality and Quantity of Affected Farmland

Farmland Quality	Build Alternative A		Build Alternative B	
	Hectares	Acres	Hectares	Acres
Direct Conversion				
Prime and Unique Farmland	9.59	23.7	12.25	30.27
Farmland of Statewide or Local Importance	8.54	21.1	8.19	20.23
Other Farmland	2.41	5.96	2.41	5.96
Indirect Conversion				
Prime Farmland, Unique Farmland, Farmland of Statewide or Local Importance	3.60	8.90	3.60	8.90

According to the FPPA, the Farmland Conversion Impact Rating (FCIR) form is the determining factor for significance of farmland conversion impacts. Direct and indirect impacts on farmland are analyzed in the FCIR form included in the CIA/RIS for the proposed action (Jones & Stokes 2003a). The Natural Resources Conservation Service assigns a relative value up to 100 points for the project site, and the project proponent (federal agency) assigns up to 160 points for the site assessment. Points are given for area in non-urban use, perimeter in non-urban use, percent of site being farmed, protection provided by state and local government, distance from urban buildup area, distance to urban support services, size of present farm unit compared to average, creation of nonfarmable farmland, availability of farm support services, on-farm investments, effects of conversion on farm support services, and compatibility with existing agricultural use. The sum of the two values gives the total points for the proposed action. Once the score is combined, the lead federal agency can identify the effect of the proposed action on farmland and determine the suitability of the site for protection as farmland. Alternatives with values less than 160 can be considered to not have adverse impacts on farmland conversion, while those with values of 160 or above can be considered to have potentially adverse impacts.

Build Alternative A: Franklin to Freeport North Alignment

Impact AG-1: Inconsistency with City and County Agriculture Goals and Policies

As shown in Table 3.4-1, this alternative would directly convert 9.59 ha (23.7 ac) of prime and unique farmland, 8.54 ha (21.1 ac) of farmland of statewide or local importance, and 2.41 ha (5.96 ac) of other farmland to nonagricultural use in the county. It would indirectly convert 3.6 ha (8.90 ac) of prime farmland, unique farmland, and farmland of statewide or local importance.

The Sacramento County General Plan agriculture policies are intended to protect prime farmlands and lands with intensive agricultural investments from conversion. However, all of the prime farmland, unique farmland, and farmland of statewide or local importance that would be converted either directly or indirectly under this alternative has been designated for urban development in the City of Sacramento General Plan since 1988. The lands have also been identified in the Sacramento County General Plan as planned for low density residential, commercial and offices, and intensive industrial land uses. Also, the other farmland that would be converted does not have intensive agricultural investments. Because these farmlands have been designated for urban development in both the City and County general plans, they are not included in the prime farmland that is intended for protection from conversion by the Sacramento County General Plan agriculture policies. Therefore, conversion of this land is consistent with these policies.

Impact AG-2: Direct Conversion of Farmland to Nonagricultural Uses

Construction of this alternative would result in the removal of approximately 20.54 ha (50.76 ac) of farmland from production. This amount includes 9.59 ha (23.7 ac) of prime and unique farmland, 8.54 ha (21.1 ac) of farmland of statewide and local importance, and 2.41 ha (5.96 ac) of other farmland. The amount of prime farmland, unique farmland, and farmland of statewide or local importance that will be converted to nonagricultural uses is less than 0.02% of the total acreage of such farmland in the county. This agricultural land would be located along the roadway corridor, within 61 m (200 ft) north and south of the centerline. The FCIR form for this alternative gives a site assessment value of 31 points. The maximum value for relative value of farmland is 100 points, as mentioned above. Combining 31 and 100 gives a total value of 131.

Impact AG-3: Indirect Conversion of Farmland to Nonagricultural Uses

The farmlands that would be affected by this alternative are surrounded by urban uses, not close to strong agricultural infrastructure. The FCIR form indicates that this alternative would indirectly convert 3.6 ha (8.90 ac) of prime farmland, unique farmland, and farmland of statewide or local importance to nonagricultural uses. The conversion would be permanent. The amount of land converted would be less than 0.01% of the total acreage of such farmland in the county.

Build Alternative B: Franklin to Freeport South Alignment

Impact AG-1: Inconsistency with City and County Agriculture Goals and Policies

As shown in Table 3.4-1, this alternative would directly convert 12.25 ha (30.27 ac) of prime and unique farmland, 8.19 ha (20.23 ac) of farmland of statewide and local importance, and 2.41 ha (5.96 ac) of other farmland to nonagricultural use in the county. It would indirectly convert 3.6 ha (8.90 ac) of prime farmland, unique farmland, and farmland of statewide or local importance.

The Sacramento County General Plan agriculture policies are intended to protect prime farmlands and lands with intensive agricultural investments from conversion. However, all of the prime farmland, unique farmland, and farmland of statewide or local importance that would be converted under this alternative has been designated for urban development in the City of Sacramento General Plan since 1988. The lands have also been identified in the Sacramento County General Plan as planned for low density residential, commercial and offices, and intensive industrial land uses. Because these farmlands have been designated for urban development in both the City and County general plans, they are not included in the prime

farmland that is intended for protection from conversion by the Sacramento County General Plan agriculture policies. Also, the other lands that would be converted do not have intensive agricultural investments. Therefore, conversion of this land is consistent with these policies.

Impact AG-2: Direct Conversion of Farmland to Nonagricultural Uses
Construction of this alternative would result in the removal of approximately 22.85 ha (56.46 ac) of farmland from production. This amount includes 12.25 ha (30.27 ac) of prime and unique farmland, 8.19 ha (20.23 ac) of farmland of statewide and local importance, and 2.41 ha (5.96 ac) of other farmland. The amount of prime farmland, unique farmland, and farmland of statewide or local importance that would be converted to nonagricultural uses is less than 0.02% of the total acreage of such farmland in the county. This agricultural land would be located along the roadway corridor, within 61 m (200 ft) to the north and south of the centerline. The FCIR form for this alternative gives a site assessment value of 31 points. The maximum value for relative value of farmland is 100 points, as mentioned above. Combining 31 and 100 gives a total value of 131.

Impact AG-3: Indirect Conversion of Farmland to Nonagricultural Uses
The farmlands that would be affected by this alternative are surrounded by urban uses, not close to strong agricultural infrastructure. The FCIR form indicates that this alternative would indirectly convert 3.6 ha (8.90 ac) of prime farmland, unique farmland, and farmland of statewide or local importance to nonagricultural uses. This impact would be a permanent impact. The amount of land converted would be less than 0.01% of the total acreage of such farmland in the County.

No Build Alternative (No Project)
The No-Build Alternative will not result in the removal of any farmland from production resulting from construction of the proposed roadway and therefore it is consistent with County agriculture goals and policies.

3.4.4 Avoidance, Minimization and Mitigation Measures
No measures have been identified.

3.4.5 Cumulative Impacts
Conversion of farmlands that would occur on implementation of the proposed action would add incrementally to the cumulative effect of loss of farmland. These farmlands have been designated for urban development in both the City and County general plans and they are not included in the prime farmland that is intended for protection from conversion.

3.5 Community Impacts

The information below is summarized from the CIA/RIS prepared for the proposed action (Jones & Stokes 2003a). These reports are available for review at City offices. This section addresses community impacts related to relocations, community character and cohesion, and environmental justice.

Relocations

3.5.1 Regulatory Setting

Federal Requirements

Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended

Government programs designed to benefit the public often result in acquisition of private property, and sometimes in the displacement of people from their homes, businesses, or farms. The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (Public Law 91-646) provides important protections and assistance for people affected by federally funded projects. This law was enacted by Congress to ensure that people whose real property is acquired or who move as a result of projects receiving federal funds will be treated fairly and equitably, and will receive assistance in moving from the property they occupy.

3.5.2 Affected Environment

The project area consists mainly of open, vacant agricultural lands. There are no residences or commercial buildings within the project corridor.

3.5.3 Impacts

Approach and Methodology

The evaluation of relocation impacts was based on information provided in the CIA/RIS for the proposed action (Jones & Stokes 2003a). It provides a qualitative assessment of the proposed action's compatibility and consistency with applicable programs and policies related to growth.

Build Alternative A: Franklin to Freeport North Alignment

Impact C/R-1: Displacement of Existing Businesses or Housing

This alternative would be constructed on primarily vacant land, and would not directly or indirectly displace any residences or businesses.

Impact C/R-2: Creation of Temporary Jobs During Construction

The construction of this alternative would generate temporary economic activity in the county and region, including purchases of goods and services required for construction and employment of workers needed for construction. This increased economic activity would prompt secondary economic activity as construction-related revenue and employee income are spent in sectors throughout the regional economy. The extent of the economic effect of construction-related

expenditures on the county economy would depend on the proportion of construction expenditures that would occur in the local and regional area and on the residential location of people employed by construction contractors. The employment and income effects generated by construction activities would extend through the construction period. This impact would be beneficial but temporary.

Impact C/R-3: Loss of Local Tax Revenue
The acquisition of right-of-way for this alternative could reduce property and sales tax revenues for the City, County, and other local agencies. The effect of right-of-way acquisitions on the property tax base has not been determined. The anticipated reduction would not substantially affect the ability of local agencies and districts to provide public and educational services.

Build Alternative B: Franklin to Freeport South Alignment
The impacts under this alternative would be the same as those described for Build Alternative A.

No Build Alternative (No Project)
Because there would be no roadway or interchange constructed under this alternative, there would be no displacement or creation of local jobs.

Impact C/R-3: Loss of Local Tax Revenue
The No-Build Alternative would not require the acquisition of right-of-way in the project area; therefore, it would not reduce property tax revenues for the County, City, and other local agencies below their current levels.

3.5.4 Avoidance, Minimization and Mitigation Measures
No measures have been identified.

3.5.5 Cumulative Impacts
None of the alternatives would displace any residences, people, or businesses. Therefore, the proposed action would not contribute to any cumulative displacement impacts that may occur as a result of the combination of other projects in the area. Effects related to generation of employment would be minor and temporary. Although the loss of some portion of the local tax base would occur from acquisition of right-of-way for the project, the loss would not be substantial.

Community Character and Cohesion

3.5.6 Regulatory Setting
There are no specific regulations that apply to community character and cohesion. Community cohesion is defined in Caltrans' Environmental Handbook, Volume 4, Community Impact Assessment (California Department of Transportation 1997), as the degree to which residents have a sense of belonging to their neighborhood; a level of commitment of the residents of the community; or a strong attachment to neighbors, groups, or institutions, usually because of

continued association over time. Communities often are delineated by physical barriers, such as major roadways or large open space areas. Cohesive communities are indicated by specific social characteristics, such as long average lengths of residency, home ownership, frequent personal contact, ethnic homogeneity, high levels of community activity, and shared goals. Transportation projects may divide cohesive neighborhoods when those projects act as physical barriers or are perceived as psychological barriers by residents. A transportation project perceived as a physical or psychological barrier may isolate one portion of a homogeneous neighborhood.

3.5.7 Affected Environment

Community and Neighborhood Characteristics

In general, there are several cohesive communities around the project area, but the project area itself is almost entirely vacant land, including the SRCSD Bufferlands. The project area includes four Census tracts: CT 43, 96.01, 96.05, and 96.18. The following description of the project area's community and demographic characteristics is based on data collected from these Census tracts.

The project area extends along a corridor between Freeport and Franklin Boulevards through undeveloped land in the southern part of Sacramento. The project area covers predominantly agricultural land uses and a considerable amount of vacant land. Freeport is located on the western edge of the project area, along Freeport Boulevard. Freeport includes a mix of commercial and residential land uses that are located adjacent to Freeport Boulevard. Freeport is bounded on the west by UPRR tracks and the Sacramento River, and on the east by agricultural fields.

There are several established neighborhoods located north and east of the project area. These neighborhoods would not be directly affected by the proposed action; however, the proposed Delta Shores development would connect to the neighborhoods to the north. Because the CTs used to define the project area extend into the surrounding neighborhoods, the population characteristics of the project area reflect the characteristics of the surrounding communities. The area south of the project is managed by SRCSD as a buffer between development and the SRWTP.

Attitudes Toward the Project

Several community meetings and a public drop-in workshop were held for the proposed action. Comments at the public workshop held in Meadowview on March 14, 2002, were generally supportive, with some concern expressed regarding the potential of the proposed action to induce development of open space and to increase noise and traffic. Comments at two meetings at the Freeport Improvement Association in March and April 2002 were related to the potential for the proposed action to improve access to businesses and commercial enterprises. Other comments related to concerns about the effect of opening up access to I-5 and the perceived increase in traffic on the "Delta River Town" character of the Freeport community.

3.5.8 Impacts

Approach and Methodology

The qualitative evaluation of adverse effects on community character and cohesion was based on information provided in the CIA/RIS for the proposed action (Jones & Stokes 2003a).

Build Alternative A: Franklin to Freeport North Alignment

Impact C/N-1: Physical or Psychological Division of a Community

There are several cohesive communities around the project area, but the project area itself is almost entirely vacant land, including the SRCSD Bufferlands. As such, this alternative would not create a barrier that would divide a cohesive community east of I-5. On the west side of I-5, this alternative would connect Freeport Boulevard with I-5. Although this connection would change the physical attributes of the area, it would not create a physical or psychological barrier. The town of Freeport is located within a very narrow north-south corridor along Freeport Boulevard, so an east-west roadway that dead-ends into Freeport would not impede the ability of residents to travel within the community or disrupt the status of Freeport Boulevard as the primary connection.

Impact C/N-2: Alter the Community Character of the Freeport Community

The proposed action may indirectly alter the existing character of the Freeport community. Currently, the Freeport community consists mainly of small, locally owned businesses, as well as residences. Because the project would create a connection to Freeport Boulevard, an increase in development in the Freeport community may follow, which may include businesses that change the character of the community to a more urbanized style. Determining what development would be likely in the future would be speculative and is not addressed in this environmental document. Any developments proposed in the future would be required to go through the environmental review and approval processes by the appropriate local agencies, which would address impacts.

Build Alternative B: Franklin to Freeport South Alignment

The impacts under this alternative would be the same as those described for Build Alternative A.

No Build Alternative (No Project)

This alternative would maintain existing conditions. Therefore, it would not affect community cohesion in the vicinity of the project area or alter the community character of the Freeport Community.

3.5.9 Avoidance, Minimization and Mitigation Measures

No measures have been identified.

3.5.10 Cumulative Impacts

None of the alternatives would create a barrier that would divide a cohesive community. Although the existing character of the Freeport community could be affected indirectly by more urbanized development that might occur because of the new connection to the interstate, any such development would be required to go through local environmental review and approval processes, which would address impacts.

Environmental Justice

3.5.11 Regulatory Setting

Federal Requirements

Executive Order 12898

Executive Order (EO) 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," requires each federal agency to take appropriate and necessary steps to identify and address disproportionately high and adverse human health and environmental effects of its programs, policies, and activities on minority populations and low-income populations.

Title VI of the Civil Rights Act

Title VI of the Civil Rights Act of 1964, as amended, prohibits discrimination in federally assisted programs. The act stipulates that no person in the United States shall, on the ground of race, color, national origin, age, sex, or disability, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance. All federal programs and projects are subject to this act. The general procedures to be followed are set forth in 49 CFR 21 and 23 CFR 200.

American Indian Religious Freedom Act

The American Indian Religious Freedom Act is intended to protect places of religious importance to American Indians, Eskimos, and Native Hawaiians. The act applies to all projects that affect places of religious importance to Native Americans. The act requires project proponents to consult with knowledgeable sources to identify and determine any effects on places of religious importance. In addition, the act requires compliance with National Historic Preservation Act (NHPA) Section 106 procedures if the property is listed on or eligible for inclusion on the National Register of Historic Places (NRHP). The act is codified in 42 U.S. Government Code (USC) 1996 (PL 95-341).

State Regulations

California Department of Transportation Title VI Policy Statement

Under Title VI of the Civil Rights Act of 1964, Caltrans ensures that no person in California shall, on the grounds of race, color, sex, and national origin, be excluded from participation in, be denied the benefits of, or be otherwise subjected to discrimination under any program or activity it administers (Appendix B).

3.5.12 Affected Environment

The project area and vicinity covers four Census tracts (CTs): CTs 43, 96.01, 96.05, and 96.18. The following description of the project area's community and demographic characteristics is based on data collected from these CTs.

According to the U.S. Bureau of the Census (2000), the population of the four CTs composing the project area was 18,573, representing 1.5% of Sacramento County's 1,223,499 residents. Most of this population resides in the residential areas north and east of the project area (CTs 43

and 96.01). Table 3.5-1 shows basic population data for California, Sacramento County, the City of Sacramento, and the project area CTs.

Table 3.5-1. Selected Demographic Characteristics: 2000 U.S. Census

Area	Population	Average Number of Persons per Household	Median Age	Median Income ($ 1999)	Percent of Persons Age 18 or Younger	Percent of Persons Age 65 or Older
California	33,871,648	2.87	33.3	47,493	27.3	10.6
Sacramento County	1,223,499	2.64	33.8	43,816	14.1	4.6
City of Sacramento	407,018	2.57	32.8	37,049	14.0	4.7
Project Area						
CT 43	7,132	3.02	21.9	27,669	41.3	7.0
CT 96.01	6,856	3.85	27.9	46,652	36.9	6.3
CT 96.05	473	2.34	44.9	35,313	18.6	18.8
CT 96.18	4,112	4.17	32.3	60,682	33.2	5.0
Project area total*	**18,573**	**3.74**	**28.7**	**42,180**	**37.3**	**6.6**

Source: U.S. Bureau of the Census 2000.
*Weighted average.

Age characteristics indicate a slightly younger population in the CTs than in the City of Sacramento, Sacramento County, and California, although median ages varies among the CTs. The median age of residents in the CTs is approximately 28.7 years, slightly lower than in the City of Sacramento, Sacramento County, or California. This trend is especially noticeable in the percent of residents in the CTs who are under 18 years of age, approximately 37%, compared to approximately 14% in the City of Sacramento and Sacramento County.

Based on data from the 2000 U.S. Census, median household income in the project area (CTs 43, 96.01, and 96.05, and 96.18) was 14% higher than the median household income for the City of Sacramento as a whole and 4% lower than for Sacramento County as a whole. Median household income varies considerably among the CTs, from $27,669 in CT 43 to $60,682 in CT 96.18. The average household income of residents in the CTs is approximately $42,180 (U.S. Bureau of the Census 2000).

Table 3.5-2 shows racial distribution data for California, Sacramento County, the City of Sacramento, and the project area CTs. As shown, the racial distribution of the population in the CTs is more diverse than elsewhere in the county. Asians are the largest racial group in the project area, accounting for approximately 27% of the total population. African Americans and whites each account for approximately 22% and Hispanics nearly 20% of the population in the project area. The CTs that include the neighborhoods north (CT 43) and east (CT 96.01) of the project area contain higher percentages of African Americans and Asians than the tracts to the south and west (CTs 96.05 and 96.18).

Table 3.5-2. Racial Distributions of Area Populations: 2000 Census

Area	Percentage of Total Population							
	White	Black or African American	American Indian or Alaska Native	Asian	Native Hawaiian or Other Pacific Islander	Other Races Alone	Two or More Races	Hispanic or Latino of Any Race
California	46.7	6.4	0.5	10.8	0.3	0.2	2.7	32.4
Sacramento County	57.8	9.7	0.7	10.8	0.6	0.3	4.2	16.0
City of Sacramento	40.5	15.0	0.8	16.4	0.9	0.4	4.4	21.6
Project Area								
CT 96.05	56.4	0.6	1.5	1.9	0.0	0.4	2.5	36.6
CT 96.01	14.5	26.7	0.3	31.3	2.5	0.9	5.9	17.9
CT 43	14.6	25.8	0.8	27.4	2.7	0.3	5.5	22.8
CT 96.18	44.2	11.7	0.5	23.9	0.4	0.1	4.9	14.2
Project Area Total	**22.2**	**22.4**	**0.6**	**27.4**	**2.1**	**0.5**	**5.4**	**19.5**

Source: U.S. Bureau of the Census 2000.

3.5.13 Impacts

Approach and Methodology

This analysis is based on a qualitative assessment of adverse effects on the environment that would result from the proposed action for each resource area evaluated in this EIS/EIR. A determination of an environmental justice effect is made if any of these adverse effects would occur specifically where target populations are located within the corridor, and no reasonable and feasible mitigation for adverse effects is available.

According to Caltrans guidelines for environmental justice analysis[1], minority and low-income populations as they apply to environmental justice are defined as:

> Black - a person having origins in any of the black racial groups of Africa.
>
> Hispanic - a person of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race.
>
> Asian American - a person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands.
>
> American Indian and Alaskan Native - a person having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or recognition.
>
> Low-Income - a person whose household income (or, in the case of a community or group, whose median household income) is at or below the U.S. Department of Health and Human Services poverty guidelines.

[1] http://www.dot.ca.gov/ser/vol1/sec3/community/ch25ej/chap25ej.htm#topic

Build Alternative A: Franklin to Freeport North Alignment

Impact EJ-1: Disproportionately High and Adverse Effect on Minority or Low-Income Populations

As discussed in the resource-specific subsections of this chapter, Build Alternative A would have some adverse effects, with no mitigation available to reduce the effect. Specific effects are discussed below.

- The visual effects of constructing the overhead crossing, and potentially the soundwall, on the south-facing viewshed from the Meadowview community (Landscape Unit 4; refer to the Aesthetics/Visual analysis in section 3.8) have been identified as unavoidably adverse. Directly affected populations would be residents in the Meadowview community who currently have relatively unobstructed views of the open space and Bufferlands.
- Adverse air quality effects that cannot be fully mitigated are either short-term, construction-related effects or indirect cumulative effects on the region (in this case, at the City, County, and Air Basin level).
- Traffic operations at some project area roadways and intersections would be unavoidably affected. Although some of these intersections are located on the boundary or within census tracts in the project area identified as having a larger minority population, these effects are on the regional traffic flow. Also, traffic will improve at many existing roadways and intersections due to the improved east-west flow associated with an additional travel route. This would decrease traffic impacts in the region. Again, this is a regional impact, which in this case, will be beneficial.
- The project includes pedestrian and bicycle facilities, which would benefit the residents of the community. The roadway extension of Cosumnes River Boulevard between Franklin Boulevard and 24th Street (as well as between I-5 and Freeport Boulevard) would include sidewalks and Class II bike lanes. In addition, sidewalks and right-of-way would be provided for bicycle facilities (on- or off-street) between 24th Street and I-5.
- The project would also provide opportunities for new transit routes in the community. The roadway extension of Cosumnes River Boulevard between Franklin Boulevard and the UPRR overhead would accommodate the proposed extension of RT's light-rail transit system to Calvine Road at Auberry Drive as a double-track facility.

In general, the construction and operations-related effects of the project would occur along the length of the project corridor, with the majority of both direct and indirect effects generally spread evenly across all populations residing near the project area or in the region. Therefore, the proposed action is not considered to potentially cause disproportionately high and adverse human health and environmental effects on minority or low-income residents.

Build Alternative B: Franklin to Freeport South Alignment

The impacts under this alternative would be the same as those described for Build Alternative A.

No Build Alternative (No Project)

The No-Build Alternative would maintain existing conditions. Therefore, it would not have any environmental justice effects.

3.5.14 Avoidance, Minimization and Mitigation Measures

No measures have been identified.

3.6 Utilities and Emergency Services

The discussion below was based on information obtained from area service providers. This section addresses issues related to utilities and emergency services.

3.6.1 Regulatory Setting

Public utilities in the project area are regulated by various entities, including (depending on the utility) the Federal Energy Regulatory Commission (FERC), California Public Utilities Commission (CPUC), and local ordinances.

Local Regulations

The Sacramento County General Plan contains goals, objectives, and policies that address public facilities, utilities, and emergency services concerns within the Sacramento County, including the following.

> **Utilities Goal:** Safe, efficient, and environmentally sound operation of solid waste facilities in Sacramento County.
>
> **Utilities Policy PF-24:** Transportation of solid waste shall utilize the safest practical means and routes of transport.

3.6.2 Affected Environment

The project area is located north of the SRWTP. Several levees, access roads, transmission lines, and other utility structures are located on or bordering the project area (Jones & Stokes 2003d, Sacramento Regional County Sanitation District 2003). Wastewater collection and treatment are provided by SRCSD. A 96-inch-diameter trunk sewer line parallels I-5 on the east side and is the city's primary interceptor line to the SRWTP. Drainage and sewer mains traverse the project area, crossing both of the proposed action alternatives (A and B) in several locations (Figure 3.6-1). The existing facilities in the project area and vicinity include sewer and drainage pipelines, manholes, drainage inlets, and drainage and sewer pump stations. The alignments of these existing facilities followed the roadways that were proposed for the area at the time of infrastructure construction. The drainage facilities were designed using the City's prescribed runoff values of 0.14 and 0.18 cubic feet per second per acre for residential and commercial development. The City field inspected the existing drainage facilities in summer 2003 and found them to be in good condition. Since the original design of the drainage facilities, the City has adopted new drainage criteria requiring the drainage system to be designed to handle the 10- and 100-year rainfall events, which requires a runoff value between 0.5-1.0 cubic feet per second per acre. Improvements to meet the new drainage criteria may include upsizing substandard drains, increasing pumping capacity, and providing detention within the drainage basin. The City is planning to field inspect the sewer pipes and conduct infiltration tests to determine if the pipes are structurally sound and actual infiltration rates are within allowable limits. (Paxton pers. comm.)

Natural gas service is provided to the project vicinity by the Pacific Gas & Electric Company (PG&E). Electric service is provided by the Sacramento Municipal Utility District (City of Sacramento 1984). The City Fire Department provides fire protection and prevention services and paramedic emergency medical service to all areas of Sacramento. The City Police Department and County Sheriff's Department provide police protection services in the area, including law enforcement, crime prevention, and community relations services (Jones & Stokes 2003d, Sacramento Regional County Sanitation District 2003). The Solid Waste Division of the City Department of Public Works provides services covering the full range of solid waste management, including collection, recycling, planning, and education for the city (City of Sacramento Department of Public Works 2002). Exact locations of all underground utilities have not yet been mapped for the proposed action.

3.6.3 Impacts

Approach and Methodology

The evaluation of the effects on utilities and emergency services was based on a qualitative assessment of existing utilities, their service characteristics, and their location within the project area.

Build Alternative A: Franklin to Freeport North Alignment

Impact UT-1: Interference with Existing Utility Infrastructure

Construction of this alternative could directly interfere with existing utility infrastructure, such as water lines and irrigation ditches, gas lines, electrical power and telephone lines, sewer mains, and drainage mains. Build Alternative A would cross known existing sewer and drainage mains in several locations. Construction activities for the proposed action would be coordinated with the City of Sacramento Department of Utilities to ensure that excavations would not affect existing drainage or sewer mains; however, the potential remains for damage to existing utility lines. Mitigation has been identified for this effect (UT-1 and UT-2).

Impact UT-2: Interference with Law Enforcement, Fire Protection, and Emergency Medical Services during Construction

During construction, travel on Franklin Boulevard, Stonecrest Avenue, Beach Lake Road, and Freeport Boulevard could be temporarily disrupted. Traffic congestion could increase because of lane closures and possible road closures. Emergency vehicles that use this road could be hindered by traffic, and lane or road closures. Mitigation has been identified for this direct effect (UT-3).

Impact UT-3: Generation of Solid Waste

Construction of this alternative would result in the generation of solid waste. The proposed action is to construct a new roadway in an area that does not have curbside solid waste pickup. However, the project proponent has provided in the project design that disposal of construction waste would be the responsibility of the construction contractor, who would be responsible for disposing of solid waste at an appropriate landfill. The quantity of solid waste generated would not substantially affect the capacity of area landfills.

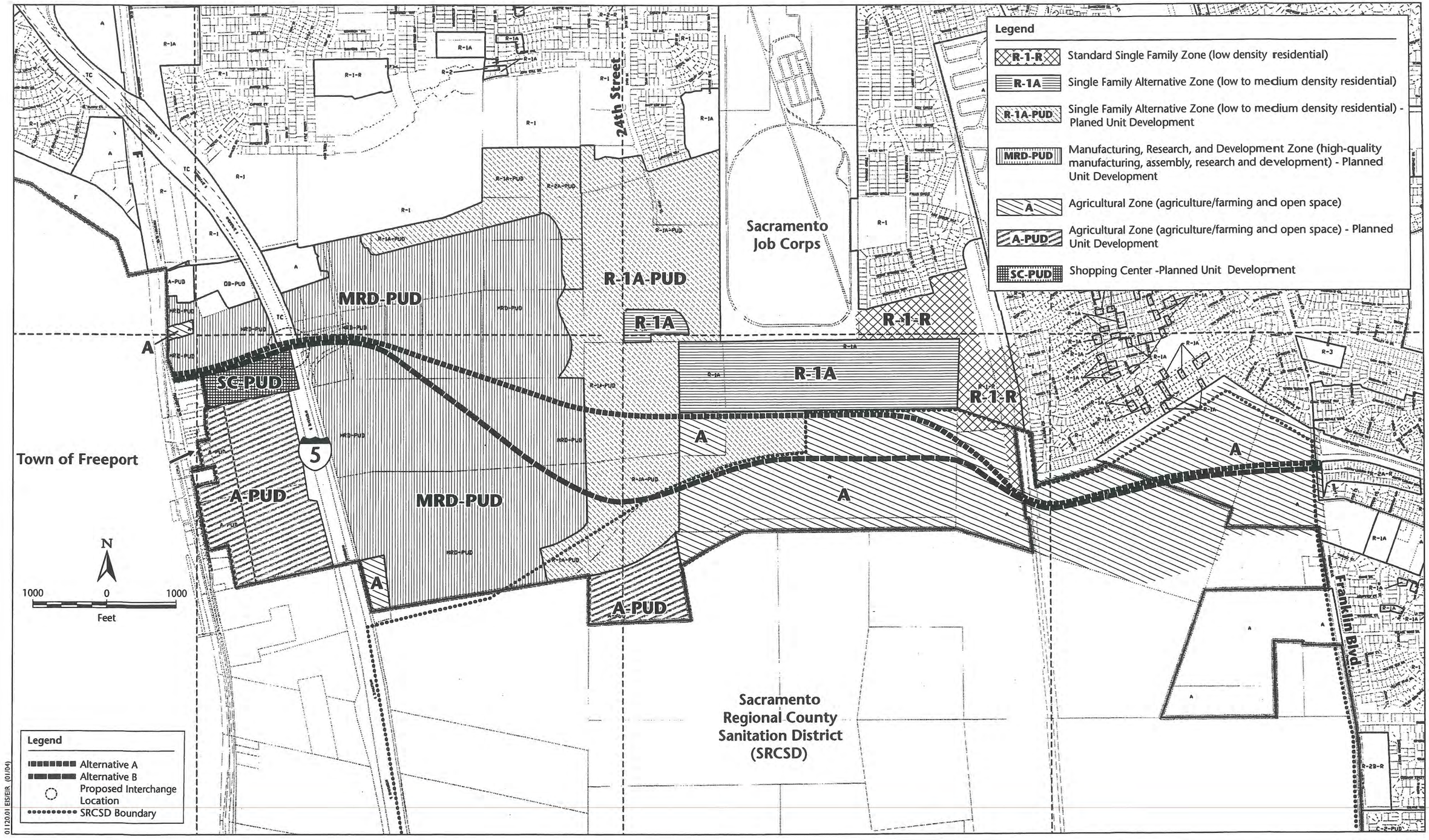
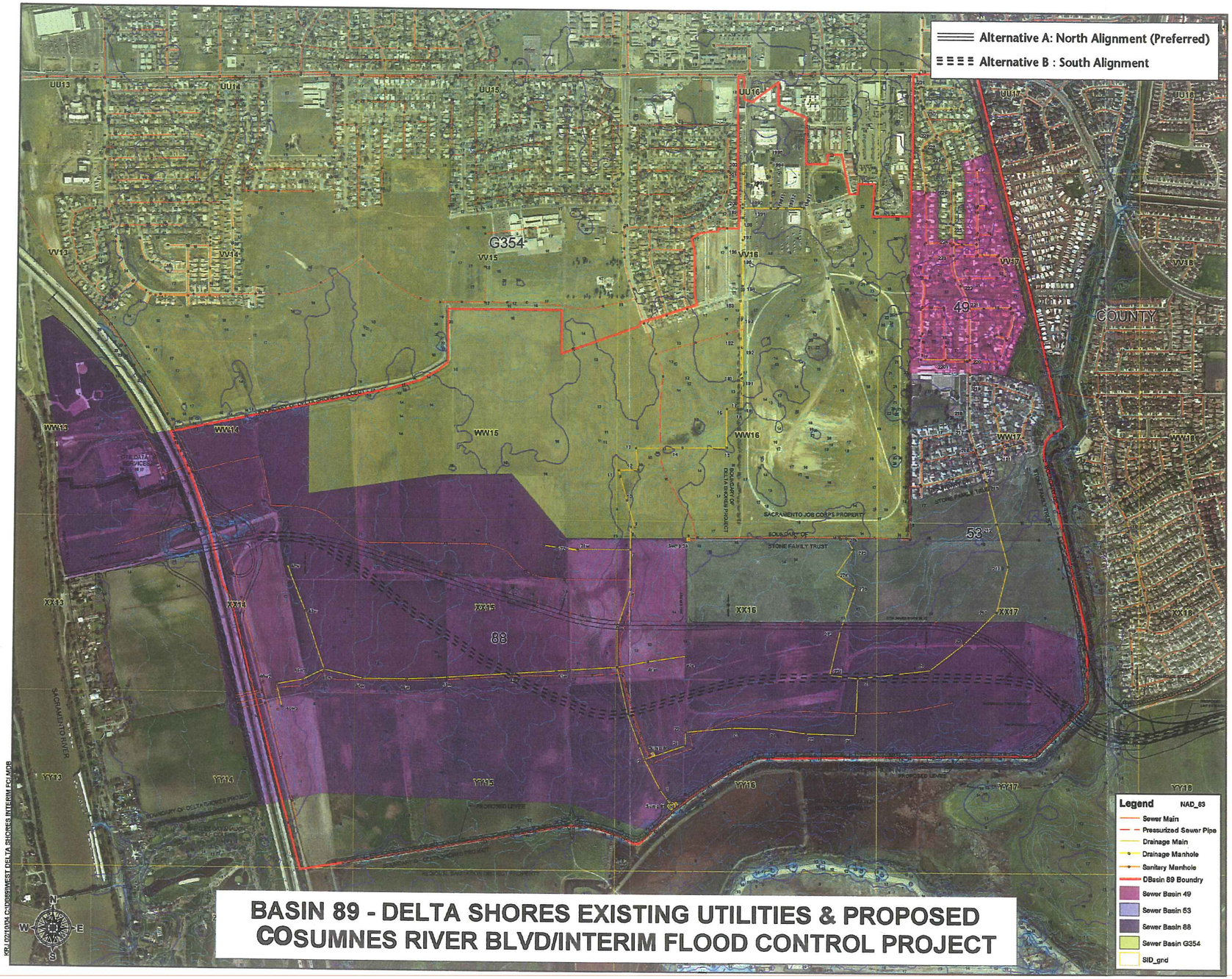


Figure 3.2-4
City of Sacramento Zoning Map



BASIN 89 - DELTA SHORES EXISTING UTILITIES & PROPOSED COSUMNES RIVER BLVD/INTERIM FLOOD CONTROL PROJECT

01120.01

Figure 3.6-1
Existing Utilities

Impact UT-4: Interfere with Planned Infrastructure

The proposed action is planned along portions of the same alignment as two other utility projects: the Lower Northwest Interceptor (LNWI) and Freeport Intake. Both projects have tentative plans to be started within the next few years. The LNWI project is planned to start construction in spring 2005. The Freeport Intake project is planned for probable start and completion within the next several years, possibly 2007-2009, but specific dates have not yet been determined. Additionally, the Sacramento Regional Transit District (RT) is constructing a 17.7-km (11-mi) extension of its light rail system from downtown Sacramento to Elk Grove. Environmental review and preliminary engineering for the second phase of the project, a segment of which is located is within the limits of the I-5/Cosumnes River Boulevard project area, is ongoing and anticipated to be completed in 2005. Depending on funding sources for LNWI and Freeport, and the environmental review progress for RT light rail, it is possible that construction of the proposed action could be concurrent with one or more of these other projects, and thereby directly interfere with construction of the Freeport Intake, Lower Northwest Interceptor, or RT light rail. Mitigation has been identified for this effect (UT-4).

Build Alternative B: Franklin to Freeport South Alignment

The impacts under this alternative would be the same as those described for Build Alternative A.

No Build Alternative (No Project)

This alternative would maintain existing conditions. Therefore, it would have no effect on utilities or emergency services.

3.6.4 Avoidance, Minimization and Mitigation Measures

Mitigation Measure UT-1: Notify Residents, Businesses, Emergency Services Personnel and Service Providers of Public Service and Utilities Disruption

Affected businesses and residents will be notified when construction will start and once construction is underway. The City or its Contractor will ensure that affected businesses and residents are notified at least 1 week in advance of any lane or road closures, or disruptions of access. In addition, emergency response personnel, such as fire protection and law enforcement personnel, would be notified at least 1 week in advance of any lane or road closures so that alternate routes can be established. If any utility services, including water, wastewater, gas, electric, etc., must be stopped during construction, service providers will provide advance notice to users. Construction activities will be designed and scheduled to minimize disruption of these services. Residents and businesses, including farms, will be notified 1 to 2 weeks before any planned disruptions to utility services.

Mitigation Measure UT-2: Adopt Utility Avoidance Measures Recommended by Underground Service Alert Evaluation

During the design phase of the proposed action, before breaking ground, the project proponent will solicit an evaluation of the alignment by Underground Service Alert (USA), which provides a free "Call Before You Dig" service to all excavators (contractors, homeowners, and others), in central/northern California. A call to USA will automatically notify all USA members who may have underground facilities at the work site. In response, the members will mark or stake the horizontal path of the underground facilities, provide information about them, or give clearance

to dig. This service protects the construction team, public, and environment from injury and hazards and protects underground facilities from being damaged.

Mitigation Measure UT-3: Comply with Emergency Service Travel Needs and Evacuation Routes and Plans

Emergency service providers (law enforcement, fire protection, and ambulance services) will be notified of all construction activities, including any street closures, at least 1 week in advance. If any lane or street closures would hinder emergency services to a level deemed unacceptable by emergency service authorities, alternatives will be considered to comply with emergency service needs.

Mitigation Measure UT-4: Coordinate Construction Activities to Reduce Interference with Planned Infrastructure

If construction on the proposed action, Lower Northwest Interceptor, and Freeport Intake (which are along the same alignment) would be concurrent, the City will coordinate with the other projects to allow access for construction of all three projects.

3.6.5 Cumulative Impacts

The proposed action could contribute to cumulative utility and emergency service impacts, including interruption of or damage to utility services (e.g., water lines and irrigation ditches, gas lines, electrical power and telephone lines, and wastewater conveyance systems) and hindrance of emergency service vehicles and personnel. However, with the project-specific mitigation described above, it is unlikely that the proposed action would result in a considerable contribution to any cumulative utility impacts.

3.7 Traffic and Transportation/Pedestrian and Bicycle Facilities

This section describes the potential impacts on the transportation system near the project site. The impact analysis examines the roadway, transit, and bicycle/pedestrian components of the overall transportation system under existing, Year 2005, and cumulative (Year 2025) conditions with and without the project alternatives. The technical analysis presented in this section is based on the 2005 Traffic Analysis Report for the Interstate 5/Cosumnes River Boulevard Interchange Draft Project Report, which is available for review at the City's offices.

3.7.1 Regulatory Setting

Existing transportation policies, laws, and regulations that would apply to the proposed project are summarized below. This information provides a context for the impact discussion related to the project's consistency with applicable regulatory conditions.

City of Sacramento General Plan

The City of Sacramento General Plan was adopted by the City of Sacramento City Council on January 19, 1988 (Resolution CC88-058) and establishes goals and policies related to all aspects of development to guide the implementation of the Plan. Key transportation goals and policy from the Circulation Elements are presented below.

Overall Goals

Goal A: Create a safe, efficient surface transportation network for the movement of people and goods.

Goal B: Provide all citizens in all communities of the City with access to a transportation network which serves both the City and region, either by personal vehicle or transit. Make a special effort to maximize alternatives to single occupant vehicle use, such as public transit.

Goal C: Maintain a desirable quality of life including good air quality while supporting planned land use and population growth.

Goals, Policies, Actions for Streets and Roads

Goal A: Create a street system which will ensure the safe and efficient movement of people and goods within and through communities and to other areas in the City and region.

Goal C: Create and maintain a street system which protects residential neighborhoods from unnecessary levels of traffic.

Goal D: Work towards achieving an overall Level of Service C on the City's local and major street systems.

Policy 2: Work towards the more efficient use of the City's existing street system.

Goals, Policies, Actions for Transit

Goal A: Promote a well designed and heavily patronized light rail and transit system.

Policy 3: Support a well designed light rail system which will meet future needs and complement the regional transit system.

Action a): Support the extension of light rail service to North Natomas, Metropolitan Airport, Meadowview-Calvine, South Sacramento, and Hazel Avenue.

Action b): Assist the Regional Transit District in identifying and preserving rights-of-way.

Action c): Reserve designated rights-of-way for the extension of the light rail system.

Goals, Policies, Actions for Pedestrians

Goal A: Increase the use of the pedestrian mode as a mode of choice for all areas of the City.

Goals, Policies, Actions for Bikeways

Goal A: Develop bicycling as a major transportation and recreational mode.

Policy 1: Develop bikeways in a coordinated manner with the County and other agencies, to facilities commuting to and from major trip generators.

The 2010 Sacramento City/County Bikeway Master Plan

Design Objective

Policy 1: Incorporate adequate street widths into street plans and developments to ensure a reasonable level of safety for bicyclists and motorists.

Policy 3: Provide adequate signing, and other traffic control measures in all bikeway design plans to insure a reasonably high level of safety for the bicyclist and motorist.

Implementation Objective

Policy 5: At the time of new street construction, pavement overlays, or seal coat operations, all bikeways within the project limits as detailed in this master plan shall be implemented.

3.7.2 Affected Environment

Existing conditions for the study area roadway, transit, bicycle, and pedestrian components of the transportation system are described below, including a description of the current roadway system near the proposed action and the traffic analysis of study area roadway segments, intersections, freeway mainline segments, transit, bicycle, and pedestrian facilities under existing conditions.

Roadway System

The area surrounding the project site is largely undeveloped. The primary existing roadways near the proposed action including I-5, Cosumnes River Boulevard, Meadowview Road, Freeport Boulevard, and Franklin Boulevard, each of which are described below.

- Interstate 5 (I-5) is a north-south interstate highway that runs the length of the west coast and connects Sacramento to Oregon and Washington to the north and southern California to the south. The freeway also functions as a commuter route for residents of the City of Elk Grove, Laguna West, southern Sacramento County, and northern San Joaquin County. I-5 has three lanes in each direction in the study area. The two-lane Stonecrest Avenue over crossing is located in the vicinity of the proposed Cosumnes River Boulevard interchange. The next interchange to the north is at Pocket Road, and the next interchange to the south is at Laguna Boulevard.
- Cosumnes River Boulevard is an east-west arterial that extends from SR 99 at Calvine Road west to its current terminus at Franklin Boulevard. Cosumnes River Boulevard consists of six lanes (three lanes in each direction) between SR 99 and Bruceville Road and narrows to two lanes from Bruceville Road to Franklin Boulevard. Extension of this roadway west from Franklin Boulevard is planned as part of the proposed interchange at I-5.
- Meadowview Road is an east-west arterial, extending from Freeport Boulevard to Brookfield Drive. The arterial continues west of Freeport Boulevard as Pocket Road and continues southeast and east of Brookfield Drive as Mack Road. The existing roadway for the Pocket Road/Meadowview Road/Mack Road corridor between I-5 and SR 99 consists of four lanes.
- Freeport Boulevard is a north-south arterial that runs through commercial and residential areas of south Sacramento and continues as a two-lane rural highway south of Freeport. Freeport Boulevard has four lanes north of the Meadowview Road/Pocket Road intersection and two lanes south. Freeport Boulevard becomes SR 160 south of the Sacramento city limits.
- Franklin Boulevard is a north-south arterial that runs through south Sacramento and Elk Grove. Franklin Boulevard has four lanes in the study area and serves residential and industrial areas.

To determine the existing operating conditions within the study area, fourteen roadway segments, ten intersections, and two freeway segments were selected for analysis by the City of Sacramento. Traffic operations for the study area roadway segments were evaluated based on daily roadway capacity thresholds outlined in the City of Sacramento Traffic Impact Guidelines (January 2002). AM and PM peak hour traffic operations were evaluated for the study area intersections and freeway segments using procedures and methodologies contained in the Highway Capacity Manual (Transportation Research Board 2000).

Operational (i.e., traffic) conditions are typically described by transportation professionals in terms of "level of service" (LOS). Level of service is a common, qualitative measure of the effect of a number of factors on traffic operation conditions, including speed, travel time, traffic interruptions, freedom to maneuver, safety, driving comfort, and convenience. LOS varies from

LOS A (the best) to LOS F (the worst). Specific LOS definitions for roadways, intersections, and freeway facilities are described in Tables 3.7-1 through 3.7-5.

Table 3.7-1. Roadway Segment LOS Criteria

Roadway	Number of Lanes	Daily Volume Threshold				
		LOS A	LOS B	LOS C	LOS D	LOS E
Arterial – Low Access Control[a]	2	9,000	10,500	12,000	13,500	15,000
	4	18,000	21,000	24,000	27,000	30,000
	6	27,000	31,500	36,000	40,500	45,000
Arterial – Moderate Access Control[b]	2	10,800	12,600	14,400	16,200	18,000
	4	21,600	25,200	28,800	32,400	36,000
	6	32,000	37,800	43,200	48,600	54,000
Arterial – High Access Control[c]	2	12,000	14,000	16,000	18,000	20,000
	4	24,000	28,000	32,000	36,000	40,000
	6	36,000	43,000	48,000	54,000	60,000
Rural 2-Lane Highway[d]	2	2,400	4,800	7,900	13,500	22,900

Source: City of Sacramento Traffic Impact Guidelines (January 2002).
[a] Low access control roads generally have frequent driveways and speeds of 25 to 35 mph.
[b] Medium access control roads generally have limited driveways and speeds of 35 to 45 mph.
[c] High access control roads generally have no driveways and speeds of 45 to 55 mph.
[d] Assumed to consist of 12-foot lanes, 6-foot shoulders, and 60 mph design speed.

Table 3.7-2. Signalized Intersection LOS Criteria

Level of Service	Description	Average Control Delay (seconds/vehicle)
A	Operations with very low delay occurring with favorable progression and/or short cycle length.	≤ 10
B	Operations with low delay occurring with good progression and/or short cycle lengths.	> 10 to 20
C	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.	> 20 to 35
D	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high volume-to-capacity ratios. Many vehicles stop and individual cycle failures are noticeable.	> 35 to 55
E	Operations with high delay values indicating poor progression, long cycle lengths, and high volume-to-capacity ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.	> 55 to 80
F	Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths.	> 80

Source: Highway Capacity Manual (Transportation Research Board 2000).

Table 3.7-3. Unsignalized Intersection LOS Criteria

Level of Service	Description	Average Control Delay (seconds/vehicle)
A	Little or no conflicting traffic.	≤ 10
B	The approach begins to notice absence of available gaps.	> 10 to 15
C	The approach begins experiencing delay for available gaps.	> 15 to 25
D	The approach experiences queuing due to a reduction in available gaps.	> 25 to 35
E	Extensive queuing due to insufficient gaps.	> 35 to 50
F	Insufficient gaps of suitable size to allow traffic demand to cross safely through a major traffic stream.	> 50

Source: Highway Capacity Manual (Transportation Research Board 2000).

Table 3.7-4. Freeway Segment LOS Criteria

Level of Service	Description	Density[a]
A	Free-flow operations.	≤ 11
B	Reasonable free-flow operations and free-flow speed is maintained	> 11 to 18
C	Speeds at or near free-flow speed, freedom to maneuver is noticeably restricted.	> 18 to 26
D	Speeds begin to decline slightly with increased flows and density, and driver experiences reduced physical and psychological comfort levels.	> 26 to 35
E	Operations at capacity with speeds above 50 mph.	> 35 to 45
F	Breakdowns in vehicular flow when flow rate exceeds capacity.	> 45

Source: Highway Capacity Manual (Transportation Research Board 2000).
[a] Passenger cars per mile per lane

Table 3.7-5. Ramp Junction LOS Criteria

Level of Service	Description	Density[a]
A	Free-flow speeds prevail. Vehicles are almost completely unimpeded in their ability to maneuver within the traffic stream.	≤ 10
B	Free-flow speeds are maintained. The ability to maneuver with the traffic stream is only slightly restricted.	> 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.	> 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.	> 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 43
F	Represents a breakdown in flow.	> 43

Source: Highway Capacity Manual (Transportation Research Board 2000).
[a] Passenger cars per mile per lane.

Roadway Segment Operations

Daily traffic volumes along roadway segments of Pocket Road, Meadowview Road, Mack Road, Franklin Boulevard, Cosumnes River Boulevard, and Freeport Boulevard/SR 160 were analyzed under existing conditions. Table 3.7-6 shows the existing daily traffic volumes and levels of service for each study roadway segment. The level of service on each segment was evaluated based on roadway capacity thresholds summarized in Table 3.7-1.

Table 3.7-6 shows that Franklin Boulevard from Mack Road to Cosumnes River Boulevard operates at LOS D under existing conditions. Franklin Boulevard is used by commuters to avoid congestion on I-5 and SR 99 during the peak periods. In addition, Franklin Boulevard becomes congested during the peak periods due to the lack of north-south connectors since the parallel Bruceville Road is a two-lane roadway and ends at the SR 99/Mack Road interchange. All other study-area roadway segments operate at LOS C or better under existing conditions.

Table 3.7-6. Study-Area Roadway Segment Operations – Existing Conditions

Roadway	Segment	Lanes	Daily Volume	V/C Ratio	LOS
Pocket Road	Greenhaven Drive to I-5	4	21,200	0.59	A
	I-5 to Freeport Boulevard	4	22,800	0.63	B
Meadowview Road	Freeport Boulevard to 24th Street	4	24,400	0.68	B
	24th Street to Brookfield Drive	4	26,500	0.74	C
Mack Road	Brookfield Drive to Franklin Boulevard	4	26,200	0.73	C
	Franklin Boulevard to Center Parkway	4	23,600	0.66	B
Franklin Boulevard	Mack Road to Cosumnes River Boulevard	4	29,000	0.81	***D***
Cosumnes River Boulevard	Franklin Boulevard to Center Parkway	2	11,400	0.57	A
	Center Parkway to Bruceville Road	2	15,200	0.76	C
	Bruceville Road to SR 99	6	30,400	0.51	A
Freeport Boulevard/SR160	Meadowview Road to Stonecrest Avenue	2	5,300	0.27	A
	Stonecrest Avenue to Freeport Bridge	2	4,200	0.23	A
	South of Freeport Bridge	2	2,100	0.12	A
Freeport Bridge	South River Road to SR-160	2	3,100	0.17	A

Source: Fehr & Peers 2005.
Note: Text in ***bold italics*** and inside box indicates unacceptable levels of service. Cosumnes River Boulevard and Freeport Boulevard from Meadowview Road to Stonecrest Avenue have high access control. All other roadways are assumed to have moderate access control.

Intersection Operations

All study-area intersections are signalized except for the SR 160/Freeport Bridge intersection, which is a T-intersection with stop-control for the Freeport Bridge approach. The following study area roadways have coordinated signal systems:

- Meadowview Road/Mack Road: Freeport Boulevard, 24th Street, and Franklin Boulevard.
- SR 99/Cosumnes River Boulevard-Calvine Road Interchange: southbound SR 99 Ramps/Cosumnes River Boulevard, and northbound SR 99 Ramps/Calvine Road.

The intersections at the I-5/Pocket Road interchange are planned to be coordinated, but the coordination has not yet been implemented. In addition, the intersection of Franklin Boulevard/Cosumnes River Boulevard is currently a T-intersection.

Table 3.7-7 summarizes the results of the study-area intersection analysis under existing conditions.

Table 3.7-7 shows that five study-area intersections operate worse than LOS C under existing conditions. The Freeport Boulevard/Meadowview Road, Franklin Boulevard/Cosumnes River Boulevard, and Center Parkway/Cosumnes River Parkway intersections operate at LOS E during the a.m. peak hour. Both the 24th Street/Meadowview Road and Franklin Boulevard/Mack Road intersections operate at LOS D during the a.m. peak hour. The only intersections operating worse than LOS C during the p.m. peak hour are the Franklin Boulevard/Mack Road intersection and the Center Parkway/Cosumnes River Boulevard intersection.

Table 3.7-7. Study-Area Intersection Operations – Existing Conditions

Location	Control	LOS / Delay[a]	
		AM Peak Hour	PM Peak Hour
Southbound I-5 Ramps/Pocket Road	Signalized	A / 8	A / 10
Northbound I-5 Ramps/Pocket Road	Signalized	B / 13	A / 9
Freeport Boulevard/Meadowview Road/Pocket Road	Signalized	***E / 71***	C / 34
SR 160/Freeport Bridge[b]	Side-Street Stop	B / 12	B / 12
24th Street/Meadowview Road	Signalized	***D / 36***	C / 32
Franklin Boulevard/Mack Road	Signalized	***D / 46***	***D / 41***
Franklin Boulevard/Cosumnes River Boulevard	Signalized	***E / 59***	B / 20
Center Parkway/Cosumnes River Boulevard	Signalized	***E / 61***	***D / 49***
Southbound SR 99 Ramps/Cosumnes River Boulevard	Signalized	C / 21	C / 32
Northbound SR 99 Ramps/Calvine Road	Signalized	B / 15	B / 16

Source: Fehr & Peers 2005.
Note: Text in ***bold italics*** and inside box indicates unacceptable levels of service.
[a] Average control delay in seconds per vehicle. Based on methodology contained in *Highway Capacity Manual* (Transportation Research Board 2000).
[b] The unsignalized intersection has side-street stop control. The results show the LOS and delay for worst-case approach.

Traffic volumes at many of the study-area intersections are higher during the a.m. peak hour as commuters from Elk Grove and south Sacramento travel north towards downtown Sacramento. Since both the I-5 and SR 99 freeways have congested conditions, Freeport Boulevard and Franklin Boulevard are attractive alternate routes. During the p.m. peak hour, freeway bottlenecks near downtown Sacramento restrict the amount of traffic that can reach the study area resulting in better traffic operations.

Freeway Mainline Segment Operations

The proposed location for the Cosumnes River Boulevard interchange is between the Laguna Boulevard and Pocket Road interchanges. The Stonecrest Avenue (Riverbend) overcrossing is near the proposed action site, but no existing freeway access is provided. Therefore, the existing conditions freeway mainline analysis, summarized in Table 3.7-8, covers the freeway section between Laguna Boulevard and Pocket Road.

Table 3.7-8. Freeway Mainline LOS – Existing Conditions

Freeway Sections	AM Peak Hour		PM Peak Hour	
	Density[a]	LOS[b]	Density[a]	LOS[b]
Northbound I-5: Laguna Boulevard to Pocket Road	29	D	17	B
Southbound I-5: Pocket Road to Laguna Boulevard	13	B	27	D

Source: Fehr & Peers 2005.
Note: There are no unacceptable operations.
[a] Density in passenger cars per mile per lane.
[b] LOS calculations based on the HCM 2000 procedures.

According to the calculations from the HCM freeway analysis, I-5 from Laguna Boulevard to Pocket Road operates with LOS D conditions in the northbound direction during the a.m. peak hour and in the southbound direction during the p.m. peak hour. However, the freeway is regularly congested in the northbound direction during the a.m. peak hour caused by queuing from downstream bottlenecks. According to the 2002 Congestion Report for the Sacramento Metropolitan Area (Caltrans District 3, 2002), the northbound queuing in the a.m. peak hour extends as far south as the Stonecrest Avenue (Riverbend) overcrossing.

Transit System

Public transit in Sacramento is provided by Sacramento Regional Transit District (RT). The primary services of RT in the study area are summarized below:

- Route 5: Meadowview/Valley Hi (Florin Hi - Meadowview Station) – Provides service between Florin High School Meadowview Station. Route 5 runs along Meadowview Road and Mack Road with 60-minute headways on weekdays, weekends, and Holidays.
- Route 7: Pocket Express (Rush River - Downtown) – Provides morning and evening peak hour service between Downtown Sacramento and the Pocket Area. Route 7 runs along Meadowview Road and Mack Road with 30-minute headways. No weekend or holiday service is provided.
- Route 63: 24th Street/Hogan (Meadowview – 24th Street – Downtown) – Serves Meadowview Road and 24th Street with 60-minute headways Monday through Friday. No weekend or holiday service is provided.
- **Route 64:** 24th Street/City College (Meadowview – 24th - Street Downtown) – Serves Meadowview Road and 24th Street with 60-minute headways Monday through Friday and on Saturday. No Sunday or holiday service is provided.

Bicycle/Pedestrian System

Bicycling and walking account of approximately 6 percent of all work trips made by residents and employees in the Sacramento region based on estimates from the *Sacramento Area Council of Governments, 2000 Sacramento Area Household Travel Survey, Final Report*, November 2000.

Within the study area, bicycling and walking activity relies heavily in the existing roadway system. With the exception of Freeport Boulevard, sidewalks are present on most study roadways except along some unimproved frontages.

Project Elements

The following discussion summarizes the project alternatives for the Cosumnes River Boulevard extension, interchange at I-5, and connection to SR-160.

No Build Alternative

Under this alternative, Cosumnes River Boulevard would not be extended and no interchange would be constructed on I-5 near Stonecrest Avenue. The analysis, however, assumes that the following projects identified in the Metropolitan Transportation Plan (Sacramento Area Council of Governments 2002) would be constructed by 2025:

- I-5 would be widened by addition of a high-occupancy vehicle (HOV) lane in both directions in the study area.
- Cosumnes River Boulevard would be widened to four lanes between Franklin Boulevard and Bruceville Road.

Build Alternative A: Franklin to Freeport North Alignment

Cosumnes River Boulevard would be extended west from its current terminus at Franklin Boulevard to Freeport Boulevard (also known as SR 160), as a four-lane roadway from Franklin Boulevard to 24th Street, as a six-lane roadway from 24th Street to I-5, and as a four-lane roadway from I-5 to Freeport Boulevard. The extension includes a grade-separated/overhead structure over the Union Pacific Railroad (UPRR) tracks and Morrison Creek. Traffic signals would be installed at the northbound and southbound I-5 ramp intersections, and high occupancy vehicle (HOV) lanes and ramp meters would be installed on the on-ramps.

The interchange at I-5 would have a partial cloverleaf interchange (Type L-9) configuration. Acceleration and deceleration lanes would be provided for all on- and off-ramps. The off-ramps would have two-lane exits: an exit-only deceleration lane and an optional exit from the shoulder lane. All of the on-ramps would be one lane at the merge influence area with the mainline. At the mainline influence area, the loop on-ramps will "add" a lane that will connect with the lane at the diagonal on-ramps.

Driveway access between the southbound I-5 Ramps and Freeport Boulevard would be restricted to right-in and right-out movements except for a mid-block eastbound left-in.

Class II bike lanes will be provided on Cosumnes River Boulevard and the interchange will have 8-foot shoulders to accommodate cyclists. In addition, the on-ramp entrances will have short-radius corners to reduce vehicular speeds at potential conflict points.

Build Alternative B: Franklin to Freeport South Alignment

Build Alternative B is identical to Build Alternative A with the exception of the alignment of Cosumnes River Boulevard between Franklin Boulevard and I-5. With Build Alternative B, this segment is south of Build Alternative A alignment.

Traffic operations are identical for both build alternatives.

Year 2005 Conditions

Year 2005 conditions for the study area roadway system including the traffic analysis of study area roadway segments, intersections, freeway mainline segments, ramp junctions, and ramp meters are summarized in Tables 3.7-9 through 3.7-13.

Table 3.7-9. Study-Area Roadway Segment Operations – 2005 Conditions

Roadway	Segment	Lanes	No Build Alternative			Build Alternatives A and B		
			Daily Volume	V/C Ratio	LOS	Daily Volume	V/C Ratio	LOS
Pocket Road	Greenhaven Drive to I-5	4	24,100	0.67	B	24,100	0.67	B
	I-5 to Freeport Boulevard	4	30,700	***0.85***	***D***	22,800	0.63	B
Meadowview Road	Freeport Boulevard to 24th Street	4	26,500	0.74	C	24,400	0.68	B
	24th Street to Brookfield Drive	4	30,400	***0.84***	***D***	26,500	0.74	C
Mack Road	Brookfield Drive to Franklin Boulevard	4	28,400	0.79	C	26,200	0.73	C
	Franklin Boulevard to Center Parkway	4	26,400	0.73	C	25,100	0.70	B
Franklin Boulevard	Mack Road to Cosumnes River Boulevard	4	31,300	***0.87***	***D***	29,000	***0.81***	***D***
Cosumnes River Boulevard	Freeport Boulevard to I-5	4	-	-	-	13,300	0.33	A
	I-5 to 24th Street	6	-	-	-	9,500	0.16	A
	24th Street to Franklin Boulevard	4	-	-	-	9,400	0.24	A
	Franklin Boulevard to Center Parkway	2	12,000	0.60	B	15,000	0.75	C
	Center Parkway to Bruceville Road	2	16,600	***0.83***	***D***	17,600	***0.88***	***D***
	Bruceville Road to SR 99	6	34,200	0.57	A	34,900	0.58	A
Freeport Boulevard/ SR 160	Meadowview Road to Cosumnes River Boulevard	2	9,600	0.48	A	7,500	0.38	A
	Cosumnes River Boulevard to Freeport Bridge	2	4,700	0.26	A	4,900	0.27	A
	South of Freeport Bridge	2	2,300	0.13	A	2,200	0.12	A
Freeport Bridge	South River Road to SR 160	2	3,500	0.19	A	3,700	0.21	A

Source: Fehr & Peers 2005.
Note: Text in ***bold italics*** and inside boxes indicates unacceptable levels of service. Cosumnes River Boulevard and Freeport Boulevard from Meadowview Road to Cosumnes River Boulevard have high access control. All other roadways are assumed to have moderate access control.

Table 3.7-10. Study-Area Intersection Operations – 2005 Conditions

Location	Control	No Build Alternative LOS / Delay[a]		Build Alternatives A and B LOS / Delay[a]	
		AM Peak	PM Peak	AM Peak	PM Peak
Southbound I-5 Ramps/Pocket Road	Signalized	B / 11	B / 13	A / 9	B / 12
Northbound I-5 Ramps/Pocket Road	Signalized	B / 20	B / 11	B / 16	B / 13
Freeport Boulevard/Meadowview Road/ Pocket Road	Signalized	***E / 56***	***E / 69***	***E / 61***	***D / 51***
SR 160/Freeport Bridge[b]	Side-Street Stop	B / 13	B / 12	B / 13	B / 13
24th Street/Meadowview Road	Signalized	C / 32	***D / 36***	C / 31	***D / 35***
Franklin Boulevard/Mack Road	Signalized	***D / 54***	***E / 67***	***D / 50***	***E / 58***
Franklin Boulevard/Cosumnes River Boulevard	Signalized	***F / >80***	C / 23	***D / 50***	C / 28
Center Parkway/Cosumnes River Boulevard	Signalized	***E / 74***	***E / 60***	***F / >80***	***F / >80***
Southbound SR 99 Ramps/Cosumnes River Boulevard	Signalized	B / 16	C / 33	B / 16	D / 37
Northbound SR 99 Ramps/Calvine Road	Signalized	A / 9	B / 11	A / 9	B / 11
Northbound I-5 Ramps/Cosumnes River Boulevard	Signalized	–	–	B / 13	A / 7
Southbound I-5 Ramps/Cosumnes River Boulevard	Signalized	–	–	B / 12	B / 10
Freeport Boulevard (SR 160)/Cosumnes River Boulevard	Signalized	–	–	B / 16	D / 37

Source: Fehr & Peers 2005.
Note: Text in ***bold italics*** and inside boxes indicates unacceptable levels of service.
[a] Average control delay is reported in seconds per vehicle. The results are based on methodology from the *Highway Capacity Manual* (Transportation Research Board 2000).
[b] The intersection has side-street stop control. Results are shown in LOS and delay for worst-case approach.

Table 3.7-11. Freeway Mainline LOS – 2005 Conditions

Freeway Sections	AM Peak Hour		PM Peak Hour	
	Density[a]	LOS[b]	Density[a]	LOS[b]
No Build Alternative				
Northbound I-5: Laguna Boulevard to Meadowview Road	31	D	19	C
Southbound I-5: Pocket Road to Laguna Boulevard	15	B	30	D
Build Alternatives A and B				
Northbound I-5: Laguna Boulevard to Cosumnes River Boulevard	31	D	19	C
Northbound I-5: Cosumnes River Boulevard to Pocket Road	32	D	20	C
Southbound I-5: Pocket Road to Cosumnes River Boulevard	15	B	31	D
Southbound I-5: Cosumnes River Boulevard to Laguna Boulevard	15	B	30	D

Source: Fehr & Peers 2005.
Note: There are no unacceptable operations.
[a] Density in passenger cars per mile per lane.
[b] LOS calculations based on the HCM 2000 procedures.

Table 3.7-12. Ramp Junction LOS – 2005 Conditions

Freeway Sections	AM Peak Hour		PM Peak Hour	
	Density[a]	LOS[b]	Density[a]	LOS[b]
No Build Alternative				
Northbound I-5: Laguna Boulevard to Pocket Road	–	–	–	–
Southbound I-5: Pocket Road to Laguna Boulevard	–	–	–	–
Build Alternatives A and B				
Northbound I-5 off-ramp	14	B	3	A
Northbound I-5 on-ramp from Eastbound Cosumnes River Boulevard	22	C	14	B
Northbound I-5 on-ramp from Westbound Cosumnes River Boulevard	28	C	17	B
Southbound I-5 off-ramp	2	A	14	B
Southbound I-5 on-ramp from Westbound Cosumnes River Boulevard	9	A	21	C
Southbound I-5 on-ramp from Eastbound Cosumnes River Boulevard	12	B	26	C

Source: Fehr & Peers 2005.
[a] Density in passenger cars per mile per lane.
[b] LOS calculations based on the HCM 2000 procedures.

Table 3.7-13. Ramp Metering Operations – 2005 Conditions

On-Ramp	Meter Type	AM Peak Period		PM Peak Period	
		Peak-Hour Volume (vph[a])	Minimum Metering Rate (vphpl[b])	Peak-Hour Volume (vph[a])	Minimum Metering Rate (vphpl[b])
No Build Alternative	There are no ramps for the No Build Alternative				
Build Alternatives A and B					
Northbound loop on-ramp from eastbound Cosumnes River Boulevard	1 Metered Lane 1 HOV Bypass Lane	100	240	210	240
Northbound diagonal on-ramp from westbound Cosumnes River Boulevard	2 Metered Lane 1 HOV Bypass Lane	620	700	260	240
Southbound loop on-ramp from westbound Cosumnes River Boulevard	1 Metered Lane 1 HOV Bypass Lane	100	240	70	240
Southbound diagonal on-ramp from eastbound Cosumnes River Boulevard	1 Metered Lane 1 HOV Bypass Lane	270	260	610	540

Source: Fehr & Peers 2005.
Note: The minimum and maximum practical metering rate is 240 and 900 vphpl, respectively.
[a] vph = vehicles per hour.
[b] vphpl = vehicles per hour per lane.

3.7.3 Impacts

Approach and Methodology

Impact significance criteria are summarized below for study area roadways, intersections, bicycle, pedestrian, transit, and freeway facilities. City of Sacramento standards are identified separately from Caltrans standards.

City of Sacramento Standards of Significance

The following standards were used to evaluate study area roadways, intersections, bicycle, pedestrian, and transit facilities.

Roadways

The City of Sacramento has established a level of service standard for roadways and intersections of LOS C. The level of service is based on volume-to-capacity ratio for roadways and average control delay at signalized and unsignalized intersections. As stated in the City's Traffic Impact Guidelines (February 1996), a significant traffic impact occurs under the following conditions:

- the addition of the project causes a facility to change from LOS A, B, or C to LOS D, E, or F, or
- the addition of the project increases the average control delay by five seconds or more at an intersection already operating worse than LOS C, or
- the addition of the project increases the volume-to-capacity ratio 0.02 or more on a roadway already operating worse than LOS C.

This standard is consistent with a goal set forth in the City of Sacramento, General Plan Update (1988). Specifically, Section 5-11 – Goal D, states that the City will "work toward achieving a Level of Service C on the city's local and major street system. Due to the constraints associated with existing development in the City, and because of other environmental concerns, this goal cannot always be met."

Bicycle Facilities

A significant bikeway impact would occur if:

- the project hindered or eliminated an existing designated bikeway, or if the project interfered with implementation of a proposed bikeway, or
- the project was to result in unsafe conditions for bicyclists, including unsafe bicycle/pedestrian or bicycle/motor vehicle conflicts.

Pedestrian Facilities

A significant pedestrian circulation impact would occur if:

- the project was to result in unsafe conditions for pedestrians, including unsafe increase in pedestrian/bicycle or pedestrian/motor vehicle conflicts.

Transit Facilities

A significant impact to the transit system would occur if:

- the project-generated ridership, when added to existing or future ridership, exceeds available or planned system capacity. Capacity is defined as the total number of passengers the system of busses and light rail vehicles can carry during the peak hours of operation.

Caltrans Standards

The following standards were used to evaluate study area freeway facilities and ramp junction intersections.

Caltrans has identified LOS E as the concept LOS for I-5 in the Interstate 5 Transportation Concept (Caltrans District 3 1997). This LOS concept was used for freeway mainline segments and ramp junction intersections and adjacent intersections like Freeport Boulevard (SR 160)/Cosumnes River Boulevard. LOS E was also applied to the SR 99/Cosumnes River Boulevard interchange ramp junctions, although the concept LOS for SR 99 is LOS F.

Build Alternative A: Franklin to Freeport North Alignment

Impact TR-1: Improved Level of Service on Pocket Road between I-5 and Freeport Boulevard

Build Alternative A would cause a redistribution of study-area traffic that would decrease daily traffic volume on Pocket Road between I-5 and Freeport Boulevard. The traffic volume decrease would improve the operations from unacceptable (LOS D) with the No Build Alternative to acceptable (LOS B) operations.

Impact TR-2: Improved Level of Service on Meadowview Road between 24th Street and Brookfield Drive

Build Alternative A would cause a redistribution of study-area traffic that would decrease daily traffic volume on Meadowview Road between 24th Street and Brookfield Drive. The traffic volume decrease would improve the operations from unacceptable (LOS D) with the No Build Alternative to acceptable (LOS C) operations.

Impact TR-3: Improved Operations on Franklin Boulevard between Mack Road and Cosumnes River Boulevard

Build Alternative A would cause a redistribution of study-area traffic that would decrease daily traffic volume on Franklin Boulevard between Mack Road and Cosumnes River Boulevard. The traffic volume decrease would reduce the volume-to-capacity ratio by 0.06 compared to operations with the No Build Alternative.

Impact TR-4: Increased Daily Traffic Volumes on Cosumnes River Boulevard between Center Parkway and Bruceville Road

Build Alternative A would cause a redistribution of study-area traffic that would increase daily traffic volumes on Cosumnes River Boulevard between Center Parkway and Bruceville Road. The traffic volume increase would increase the volume-to-capacity ratio by 0.5, which would exceed the 0.2 threshold established by the City of Sacramento. The addition of second lane in each direction (for a total of four lanes) would improve operations in this segment. Mitigation is identified for this road segment.

Impact TR-5: Increased Peak Hour Traffic Volumes on Critical Turn Movements at the Freeport Boulevard/Meadowview Road Intersection

Build Alternative A would cause a redistribution of study-area traffic that would increase peak hour traffic volumes on critical turn movements at the Freeport Boulevard/Meadowview Road intersection (LOS E – in the a.m. peak hour), which would increase the average control delay by 5.0 seconds. Mitigation is identified for this intersection.

Impact TR-6: Improved Operations at the 24th Street/Meadowview Road Intersection

Build Alternative A would cause a redistribution of study-area traffic that would reduce delay at the 24th Street/Meadowview Road intersection compared to the No Build Alternative.

Impact TR-7: Improved Operations at the Franklin Boulevard/Mack Road Intersection

Build Alternative A would cause a redistribution of study-area traffic that would reduce delay at the Franklin Boulevard/Mack Road intersection compared to the No Build Alternative.

Impact TR-8: Improved Operations at the Franklin Boulevard/Cosumnes River Boulevard Intersection

Build Alternative A would cause a redistribution of study-area traffic that would reduce delay at the Franklin Boulevard/Cosumnes River Boulevard intersection compared to the No Build Alternative.

Impact TR-9: Increased Peak Hour Traffic Volumes on Critical Turn Movements at the Center Parkway/Cosumnes River Boulevard Intersection

Build Alternative A would cause a redistribution of study-area traffic that would increase peak hour traffic volumes on critical turn movements at the Center Parkway/Cosumnes River Boulevard intersection, which would increase the average control delay by more than 5.0 seconds.

Impact TR-10: Increased Peak Hour Traffic Volumes on Critical Turn Movements at the Southbound SR 99 Ramps/Cosumnes River Boulevard Intersection

Build Alternative A would cause a redistribution of study-area traffic that would increase peak hour traffic volumes on critical turn movements at the southbound SR 99 Ramps/Cosumnes River Boulevard intersection (LOS D – in the p.m. peak hour), which would change the LOS from LOS C to LOS D operations. LOS D is acceptable under the Caltrans standards.

Impact TR-11: Redistribution of Study Area Traffic Resulting in Increased Traffic at the Freeport Boulevard (SR 160)/Cosumnes River Boulevard Intersection

Build Alternative A would cause a redistribution of study-area traffic that would result in LOS D operations at the Freeport Boulevard (SR 160)/Cosumnes River Boulevard in the p.m. peak hour. However, this intersection is a Caltrans facility and LOS E is acceptable under the Caltrans standards.

Impact TR-12: Temporary Delays in Circulation During Construction of the Project

Construction of Build Alternative A would last approximately 24 months. Construction near the Deerfield subdivision would occur primarily between 7 a.m. and 4 p.m. on weekdays. Daytime access to businesses on Freeport Boulevard would be maintained during construction, and at least one lane of traffic on Franklin and Freeport Boulevards would remain open during

construction; however, construction activities could temporarily disrupt traffic circulation patterns on Franklin Boulevard, Stonecrest Avenue, and Freeport Boulevard. In addition mainline work and work on the interchange will be required to be conducted during off-peak hours to minimize disruption to traffic on the interstate.

Alternative B: Franklin to Freeport South Alignment

The impacts for Build Alternative B are identical to Build Alternative A.

No Build Alternative

Impact TR-13: Unacceptable (LOS D) Operations on Area Roadways

Under the No Build Alternative, level of service on area roadways would continue to deteriorate as follows.

Along the following roadway segments, the No Build Alternative would result in unacceptable (LOS D) operations:

- Pocket Road between I-5 and Freeport Boulevard
- Meadowview Road between 24th Street and Brookfield Drive
- Franklin Boulevard between Mack Road and Cosumnes River Boulevard
- Cosumnes River Boulevard between Center Parkway and Bruceville Road

In addition, the No Build Alternative would result in unacceptable operations at the following intersections:

- Freeport Boulevard/Meadowview Road intersection: unacceptable (LOS E) operations at the during the a.m. and p.m. peak hours
- 24th Street/Meadowview Road intersection: unacceptable (LOS D) operations and higher delay during the p.m. peak hour
- Franklin Boulevard/Mack Road intersection: unacceptable (LOS D and E) operations and higher delay during the a.m. and p.m. peak hours, respectively
- Franklin Boulevard/Cosumnes River Boulevard intersection: unacceptable (LOS F) operations and higher delay during the a.m. peak hour

The No Build Alternative would not construct the extension of Cosumnes River Boulevard between Franklin Boulevard and Freeport Boulevard or provide an interchange at I-5. Consequently, the existing two-way stop controlled intersection on Freeport Boulevard at Stonecrest Avenue intersection would remain.

The No Build Alternative would not be consistent with the City's General Plan and would not create a new regional connection between Franklin Boulevard and Freeport Boulevard. Consequently, the No Build Alternative would not provide a new connection for bicyclists and pedestrians or for new transit routes.

3.7.4 Cumulative Impacts

Cumulative (Year 2025) Conditions[2]

Cumulative (Year 2025) conditions for the study area roadway system are summarized in Tables 3.7-14 through 3.7-20, which include traffic analysis results for study area roadway segments, intersections, freeway mainline segments, ramp junctions, and regional circulation performance. Impacts under both Build Alternatives would be identical.

Table 3.7-14. Study Area Roadway Segment Operations – 2025 Conditions

Roadway	Segment	Lanes	No Build Alternative			Build Alternatives A and B		
			Daily Volume	V/C Ratio	LOS	Daily Volume	V/C Ratio	LOS
Pocket Road	Greenhaven Drive to I-5	4	26,500	0.74	C	27,800	0.77	C
	I-5 to Freeport Boulevard	4	44,900	***1.25***	***F***	23,000	0.64	B
Meadowview Road	Freeport Boulevard to 24th Street	4	38,000	***1.06***	***F***	27,400	0.76	C
	24th Street to Brookfield Drive	4	45,400	***1.26***	***F***	34,600	***0.96***	***E***
Mack Road	Brookfield Drive to Franklin Boulevard	4	35,700	***0.99***	***E***	28,600	0.79	C
	Franklin Boulevard to Center Parkway	4	29,400	***0.82***	***D***	28,000	0.78	C
Franklin Boulevard	Mack Road to Cosumnes River Boulevard	4	43,400	***1.21***	***F***	38,500	***1.07***	***F***
Cosumnes River Boulevard	Freeport Boulevard to I-5	4	–	–	–	24,100	0.60	B
	I-5 to 24th Street	6	–	–	–	29,200	0.49	A
	24th Street to Franklin Boulevard	4	–	–	–	27,300	0.68	B
	Franklin Boulevard to Center Parkway	4	24,700	0.62	B	35,700	***0.89***	***D***
	Center Parkway to Bruceville Road	4	32,100	***0.80***	***D***	38,000	***0.95***	***E***
	Bruceville Road to SR 99	6	54,300	***0.91***	***E***	58,800	***0.98***	***E***
Freeport Boulevard	Meadowview Road to Cosumnes River Boulevard	2	18,400	***0.92***	***E***	14,400	0.72	C
	Cosumnes River Boulevard to Freeport Bridge	2	7,100	0.39	A	9,400	0.52	A
	South of Freeport Bridge	2	3,500	0.19	A	3,300	0.18	A
Freeport Bridge	South River Road to SR-160	2	5,100	0.28	A	7,200	0.40	A

Source: Fehr & Peers 2005.
Notes: Text in ***bold italics*** and inside boxes indicates unacceptable levels of service. Cosumnes River Boulevard has high access control. All other roadways are assumed to have moderate access control.

[2] The cumulative analyses in the traffic report and this document are based on the anticipated travel demand for 2025. The project is expected to be completed by 2008. Based on a review of the traffic forecasting model, the growth rate from 2000 to 2025 is estimated at 2.1 percent per year. Most of that growth is anticipated to occur between 2000 and 2015 (with an estimated growth rate of 3.1 percent), slowing to a growth rate of 0.6 percent per year from 2015 to 2025. This trend is consistent with the timing and level of development anticipated to occur in Elk Grove south of the project area. If the annual average growth rate of 0.6 percent for the period between 2015 and 2025 is extrapolated over the time period from 2025 to 2030, the difference is approximately 3 percent and is statistically insignificant.

Table 3.7-15. Study Area Intersection Operations – 2025 Conditions

Location	Control	No Build Alternative LOS / Delay[a]		Build Alternatives A and B LOS / Delay[a]	
		AM Peak	PM Peak	AM Peak	PM Peak
Southbound I-5 Ramps/Pocket Road	Signalized	B / 17	B / 16	A / 9	B / 16
Northbound I-5 Ramps/Pocket Road	Signalized	C / 26	B / 16	B / 18	C / 24
Freeport Boulevard/Meadowview Road/Pocket Road	Signalized	***F / >80***	***F / >80***	***F / >80***	***F / >80***
SR 160/Freeport Bridge[b]	Side-Street Stop	***F / >50***	***E / 43***	***F / >50***	***F / >50***
24th Street/Meadowview Road	Signalized	***E / 78***	***F / >80***	***F / >80***	***F / >80***
Franklin Boulevard/Mack Road	Signalized	***F / >80***	***F / >80***	***E / 62***	***E / 63***
Franklin Boulevard/Cosumnes River Boulevard	Signalized	***F / >80***	***F / >80***	***F / >80***	***E / 77***
Center Parkway/Cosumnes River Boulevard	Signalized	***F / > 80***	***F / > 80***	***F / > 80***	***F / > 80***
Southbound SR 99 Ramps/Cosumnes River Boulevard	Signalized	D / 44	E / 73	D / 50	E / 75
Northbound SR 99 Ramps/Calvine Road	Signalized	C / 31	D / 38	C / 30	D / 42
Northbound I-5 Ramps/Cosumnes River Boulevard	Signalized	–	–	B / 18	B / 11
Southbound I-5 Ramps/Cosumnes River Boulevard	Signalized	–	–	C / 23	C / 22
Freeport Boulevard (SR 160)/Cosumnes River Boulevard	Signalized	–	–	C / 33	E / 77

Source: Fehr & Peers 2005.
Note: Text in ***bold italics*** and inside boxes indicates unacceptable levels of service.
[a] Average control delay is reported in seconds per vehicle. The results are based on methodology from the *Highway Capacity Manual* (Transportation Research Board 2000).
[b] The intersection has side-street stop control. Results are shown in LOS and delay for worst-case approach.

Table 3.7-16. Peak Hour Queue Lengths and Storage Lengths – Year 2025 Conditions – with Build Alternatives A and B

Intersection	Movement	Proposed Storage Length (feet)	95th Percentile Queue Length[b] (feet)	
			AM	PM
Cosumnes River Boulevard / NB I-5 off-ramp	EB Through	980[a]	325	390
	NB Left	1,260	305	195
	NB Right	1,260	145	100
Cosumnes River Boulevard / SB I-5 off-ramp	EB Through	610[a]	80	275
	EB Right	230	20	35
	WB Through	980[a]	455	240
	SB Left	1,090	245	375
	SB Right	1,090	440	240
Freeport Boulevard / Cosumnes River Boulevard	WB Right	1,100	100	100
	WB Left	1,100[c]	525	770
	SB Left	150	***330***	***630***

Source: Fehr & Peers 2005.
Note: Text in ***bold italics*** and inside box indicates a queue length longer than the storage length.
[a] Proposed storage between adjacent intersections (measured stopbar to stopbar).
[b] Based on methodology contained in *Highway Capacity Manual* (Transportation Research Board 2000).
[c] Proposed storage measured from stopbar at Freeport to southbound ramp-terminal intersection.

Table 3.7-17. Freeway Mainline LOS – 2025 Conditions

Freeway Sections	AM Peak Hour		PM Peak Hour	
	Density[a]	LOS[b]	Density[a]	LOS[b]
No Build Alternative				
Northbound I-5: Laguna Boulevard to Pocket Road	37	E	19	C
Southbound I-5: Pocket Road to Laguna Boulevard	15	B	34	D
Build Alternatives A and B				
Northbound I-5: Laguna Boulevard to Cosumnes River Boulevard	37	E	19	C
Northbound I-5: Cosumnes River Boulevard to Pocket Road	37	E	23	D
Southbound I-5: Pocket Road to Cosumnes River Boulevard	19	C	38	E
Southbound I-5: Cosumnes River Boulevard to Laguna Boulevard	15	B	34	D

Source: Fehr & Peers 2005.
Note: There are no unacceptable operations.
[a] Density in passenger cars per mile per lane.
[b] LOS calculations based on the HCM 2000 procedures.

Table 3.7-18. Ramp Junction LOS – 2025 Conditions

Freeway Sections	AM Peak Hour		PM Peak Hour	
	Density[a]	LOS[b]	Density[a]	LOS[b]
No Build Alternative				
I-5 Northbound off-ramp to Pocket Road	38	E	27	C
I-5 Northbound Loop on-ramp from Eastbound Pocket Road	33	D	21	C
I-5 Northbound Diagonal on-ramp from Westbound Pocket Road	***> 43***	***F***	27	C
I-5 Southbound off-ramp to Pocket Road	27	C	***> 43***	***F***
I-5 Southbound Loop on-ramp from Westbound Pocket Road	18	B	33	D
I-5 Southbound Diagonal on-ramp from Eastbound Pocket Road	19	B	34	D
Build Alternatives A and B				
Northbound I-5 off-ramp to Cosumnes River Boulevard	19	B	6	A
Northbound I-5 on-ramp from Eastbound Cosumnes River Boulevard	24	C	16	B
Northbound I-5 on-ramp from Westbound Cosumnes River Boulevard	32	D	23	C
Southbound I-5 off-ramp to Cosumnes River Boulevard	10	A	23	C
Southbound I-5 on-ramp from Westbound Cosumnes River Boulevard	9	A	28	C
Southbound I-5 on-ramp from Eastbound Cosumnes River Boulevard	13	B	34	D
I-5 Northbound off-ramp to Pocket Road	38	E	30	D
I-5 Northbound Loop on-ramp from Eastbound Pocket Road	33	D	24	C
I-5 Northbound Diagonal on-ramp from Westbound Pocket Road	37	E	28	C
I-5 Southbound off-ramp to Pocket Road	26	C	***> 43***	***F***
I-5 Southbound Loop on-ramp from Westbound Pocket Road	19	B	33	D
I-5 Southbound Diagonal on-ramp from Eastbound Pocket Road	24	C	36	E

Source: Fehr & Peers 2005.
Note: Text in ***bold italics*** and inside boxes indicates unacceptable operations.
[a] Density in passenger cars per mile per lane.
[b] LOS calculations based on the HCM 2000 procedures.

Table 3.7-19. Ramp Metering Operations – 2025 Conditions

On-Ramp	Meter Type	AM Peak Period		PM Peak Period	
		Peak-Hour Volume (vph[a])	Minimum Metering Rate (vphpl[b])	Peak-Hour Volume (vph[a])	Minimum Metering Rate (vphpl[b])
Build Alternatives A and B					
Northbound loop on-ramp from eastbound Cosumnes River Boulevard	1 Metered Lane 1 HOV Bypass Lane	220	360	380	400
Northbound diagonal on-ramp from westbound Cosumnes River Boulevard	2 Metered Lanes 1 HOV Bypass Lane	930	500	830	500
Southbound loop on-ramp from westbound Cosumnes River Boulevard	1 Metered Lane 1 HOV Bypass Lane	110	240	350	280
Southbound diagonal on-ramp from eastbound Cosumnes River Boulevard	1 Metered Lane 1 HOV Bypass Lane	410	430	860	770

Source: Fehr & Peers 2005.
Note: The minimum and maximum practical metering rate is 240 and 900 vphpl, respectively.
[a] vph = vehicles per hour.
[b] vphpl = vehicles per hour per lane.

Table 3.7-20. Percent Change in Vehicle Miles Traveled and Vehicle Hours Traveled – 2025 Conditions

Performance Measure	Proposed Project
Local-Area (includes the area bounded by Meadowview Road to the north, Cosumnes River Boulevard to the south, SR-99 to the east, and the Sacramento River to the west.)	
Vehicle miles of travel	-3.5%
Vehicle hours of travel	-7.0%
Sub-Regional (includes the area bounded by Florin Road to the north, Elk Grove Boulevard to the south, Elk Grove Florin Road to the east, and the Sacramento River to the west.)	
Vehicle miles of travel	0.5%
Vehicle hours of travel	-1.4%
Regional (includes portions of El Dorado, Placer, Sacramento, Sutter, Yolo, and Yuba counties.)	
Vehicle miles of travel	0.0%
Vehicle hours of travel	-0.3%

Source: Fehr & Peers 2005.

Impact TR-14: Improved Cumulative Operations on Pocket Road between I-5 and Freeport Boulevard

Under cumulative plus project conditions, the Build Alternatives would cause a redistribution of study-area traffic that would decrease daily traffic volume on Pocket Road between I-5 and Freeport Boulevard. The traffic volume decrease would improve the operations from unacceptable (LOS F) with the No Build Alternative to acceptable (LOS B) operations. The No Build Alternative would result in unacceptable (LOS F) operations on Pocket Road between I-5 and Freeport Boulevard.

Impact TR-15: Improved Cumulative Operations on Meadowview Road between Freeport Boulevard and 24th Street

Under cumulative plus project conditions, the Build Alternatives would cause a redistribution of study-area traffic that would decrease daily traffic volume on Meadowview Road between Freeport Boulevard and 24th Street. The traffic volume decrease would improve the operations from unacceptable (LOS F) with the No Build Alternative to acceptable (LOS C) operations. The No Build Alternative would result in unacceptable (LOS F) operations on Meadowview Road between Freeport Boulevard and 24th Street.

Impact TR-16: Improved Cumulative Operations on Meadowview Road between 24th Street and Brookfield Drive

Under cumulative plus project conditions, the Build Alternatives would cause a redistribution of study-area traffic that would decrease daily traffic volume on Meadowview Road between 24th Street and Brookfield Drive. The traffic volume decrease would improve the operations from unacceptable (LOS F) with the No Build Alternative to LOS E. The No Build Alternative would result in unacceptable (LOS F) operations on Meadowview Road between 24th Street and Brookfield Drive.

Impact TR-17: Improved Cumulative Operations on Mack Road between Brookfield Drive and Franklin Boulevard

Under cumulative plus project conditions, the Build Alternatives would cause a redistribution of study-area traffic that would decrease daily traffic volume on Mack Road between Brookfield Drive and Franklin Boulevard. The traffic volume decrease would improve the operations from unacceptable (LOS E) with the No Build Alternative to acceptable (LOS C) operations. The No Build Alternative would result in unacceptable (LOS E) operations on Mack Road between Brookfield Drive and Franklin Boulevard.

Impact TR-18: Improved Cumulative Operations on Mack Road between Franklin Boulevard and Center Parkway

Under cumulative plus project conditions, the Build Alternatives would cause a redistribution of study-area traffic that would decrease daily traffic volume on Mack Road between Franklin Boulevard and Center Parkway. The traffic volume decrease would improve the operations from unacceptable (LOS D) with the No Build Alternative to acceptable (LOS C) operations. The No Build Alternative would result in unacceptable (LOS D) operations on Mack Road between Franklin Boulevard and Center Parkway.

Impact TR-19: Improved Cumulative Operations on Franklin Boulevard between Mack Road and Cosumnes River Boulevard

Under cumulative plus project conditions, the Build Alternatives would cause a redistribution of study-area traffic that would decrease daily traffic volume on Franklin Boulevard between Mack Road and Cosumnes River Boulevard. The traffic volume decrease would reduce the volume-to-capacity ratio by 0.14 compared to the No Build Alternative. The No Build Alternative would result in unacceptable (LOS F) operations on Franklin Boulevard between Mack Road and Cosumnes River Boulevard.

Impact TR-20: Increased Cumulative Daily Traffic Volumes on Cosumnes River Boulevard between Franklin Boulevard and Center Parkway

Under cumulative plus project conditions, the Build Alternatives would cause a redistribution of study-area traffic that would increase daily traffic volumes on Cosumnes River Boulevard between Franklin Boulevard and Center Parkway. The traffic volume increase would change the level of service from acceptable (LOS B) operations to unacceptable (LOS D) operations. Widening Cosumnes River Boulevard to six lanes would improve operations in this segment, but there is not adequate right of way to widen to six lanes. The No Build Alternative would result in acceptable (LOS B) operations on Cosumnes River Boulevard between Franklin Boulevard and Center Parkway.

Impact TR-21: Increased Cumulative Daily Traffic Volumes on Cosumnes River Boulevard between Center Parkway and Bruceville Road

Under cumulative plus project conditions, the Build Alternatives would cause a redistribution of study-area traffic that would increase daily traffic volumes on Cosumnes River Boulevard between Center Parkway and Bruceville Road. The traffic volume increase would increase the volume-to-capacity ratio by 0.15, which exceeds the 0.02 threshold established by the City, and result in unacceptable (LOS E) operations. Widening Cosumnes River Boulevard to six lanes would improve operations on this segment, but there isn't adequate right of way to widen to six lanes. The No Build Alternative would result in unacceptable (LOS E) operations on Cosumnes River Boulevard between Center Parkway and Bruceville Road.

Impact TR-22: Increased Cumulative Daily Traffic Volumes on Cosumnes River Boulevard between Bruceville Road and SR 99

Under cumulative plus project conditions, the Build Alternatives would cause a redistribution of study-area traffic that would increase daily traffic volumes on Cosumnes River Boulevard between Bruceville Road and SR 99. The traffic volume increase would increase the volume-to-capacity ratio by 0.07, which exceeds the 0.02 threshold established by the City, and result in unacceptable (LOS E) operations. Widening Cosumnes River Boulevard to eight lanes in this segment would improve operations; however, this improvement would require additional right-of-way. The need for additional right-of-way, plus encroachment into the Unionhouse/Strawberry Creek detention basin, makes this improvement infeasible. The No Build Alternative would result in unacceptable (LOS E) operations on Cosumnes River Boulevard between Bruceville Road and SR 99.

Impact TR-23: Improved Cumulative Operations on Freeport Boulevard between Meadowview Road and Cosumnes River Boulevard

Under cumulative plus project conditions, the Build Alternatives would cause a redistribution of study-area traffic that would decrease daily traffic volume on Freeport Boulevard between Meadowview Road and Cosumnes River Boulevard. The traffic volume decrease would improve the operations from unacceptable (LOS E) with the No Build Alternative to acceptable (LOS C) operations. The No Build Alternative would result in unacceptable (LOS E) operations on Freeport Boulevard between Meadowview Road and Cosumnes River Boulevard.

Impact TR-24: Improved Cumulative Operations at the Freeport Boulevard/Meadowview Road Intersection

Under cumulative plus project conditions, the Build Alternatives would cause a redistribution of study-area traffic that would reduce peak hour traffic volumes entering the Freeport Boulevard/Meadowview Road intersection by approximately 1,000 and 900 vehicles during the a.m. and p.m. peak hours, respectively. The volume reduction will reduce peak hour delay at the intersection compared to the No Build Alternative. The No Build Alternative would result in unacceptable (LOS F) operations at the Freeport Boulevard/Meadowview Road intersection during the a.m. and p.m. peak hours.

Impact TR-25: Increased Cumulative Peak Hour Traffic Volumes on Critical Turn Movements at the SR 160/Freeport Bridge Intersection

Under cumulative plus project conditions, the Build Alternatives would cause a redistribution of study-area traffic that would increase peak hour traffic volumes on critical turn movements at the SR 160/Freeport Bridge intersection, which would increase the average control delay by more than 5.0 seconds. The No Build Alternative would result in unacceptable (LOS F and E) operations at the SR 160/Freeport Bridge intersection during the a.m. and p.m. peak hours, respectively.

Impact TR-26: Reduced Cumulative Peak Hour Traffic Volumes Entering the 24th Street/Meadowview Road Intersection

Under cumulative plus project conditions, the Build Alternatives would cause a redistribution of study-area traffic that would reduce peak hour traffic volumes entering the 24th Street/Meadowview Road intersection by approximately 200 and 700 vehicles during the a.m. and p.m. peak hours, respectively. The volume reduction will reduce p.m. peak hour delay at the intersection; however, delay during the a.m. peak hour will increase by 3.0 seconds compared to the No Build Alternative. Although total peak hour traffic volumes decrease during the a.m. peak hour, traffic volumes redistribute and increase on critical turning movements, which causes delay to increase. The No Build Alternative would result in unacceptable (LOS E and F) operations at the 24th Street/Meadowview Road intersection during the a.m. and p.m. peak hours, respectively.

Impact TR-27: Improved Cumulative Operations at the Franklin Boulevard/Mack Road Intersection

Under cumulative plus project conditions, the Build Alternatives would cause a redistribution of study-area traffic that would reduce peak hour traffic volumes entering the Franklin Boulevard/Mack Road intersection. The volume would improve unacceptable (LOS F) operations to acceptable (LOS E) operations during the a.m. and p.m. peak hours compared to the No Build Alternative. The No Build Alternative would result in unacceptable (LOS F) operations at the Franklin Boulevard/Mack Road intersection during the a.m. and p.m. peak hours.

Impact TR-28: Increased Cumulative Peak Hour Traffic Volumes Entering the Franklin Boulevard/Cosumnes River Boulevard Intersection

Under cumulative conditions, the Build Alternatives would cause a redistribution of study-area traffic that would increase peak hour traffic volumes entering the Franklin Boulevard/Cosumnes River Boulevard intersection but reduce delay during the a.m. peak hour and provide LOS E

operations during the p.m. peak hour, due to capacity improvements at this intersection. The No Build Alternative would result in unacceptable (LOS F) operations at the Franklin Boulevard/Cosumnes River Boulevard intersection during the a.m. and p.m. peak hours.

Impact TR-29: Increased Cumulative Peak Hour Traffic Volumes Entering the Center Parkway/Cosumnes River Boulevard Intersection

Under cumulative plus project conditions, the Build Alternatives would cause a redistribution of study-area traffic that would increase peak hour traffic volumes on critical turn movements at the Center Parkway/Cosumnes River Boulevard intersection, which would increase the average control delay by more than 5.0 seconds. The No Build Alternative would result in unacceptable (LOS F) operations at the Center Parkway/Cosumnes River Boulevard intersection during the a.m. and p.m. peak hours.

Impact TR-30: Increased Cumulative Peak Hour Traffic Volumes on Critical Turn Movements at the Southbound SR 99 Ramps/Cosumnes River Boulevard Intersection

Under cumulative plus project conditions, the Build Alternatives would cause a redistribution of study-area traffic that would increase peak hour traffic volumes on critical turn movements at the southbound SR 99 Ramps/Cosumnes River Boulevard intersection, which would increase delay by more than 5.0 seconds during the a.m. and p.m. peak hours; however, the LOS would remain at LOS D and E for the a.m. and p.m. peak hour, respectively, which is consistent with Caltrans standards. The No Build Alternative would also result in LOS D and E operations at the southbound SR 99 Ramps/Cosumnes River Boulevard intersection during the a.m. and p.m. peak hour, respectively.

Impact TR-31: Redistribution of Cumulative Study Area Traffic Resulting in LOS E during the p.m. peak hour at the Freeport Boulevard (SR 160)/Cosumnes River Boulevard Intersection

Under cumulative plus project conditions, the Build Alternatives would cause a redistribution of study-area traffic that would result in LOS E operations at the Freeport Boulevard (SR 160)/Cosumnes River Boulevard in the p.m. peak hour. However, this intersection is on a Caltrans-owned facility and LOS E is acceptable under Caltrans standards.

Impact TR-32: Redistribution of Cumulative Traffic on the I-5 Mainline and at Many of the Freeway Ramp Junctions

Under cumulative plus project conditions, the Build Alternatives would redistribute traffic on I-5 by providing an additional entrance/exit to the interstate. The mainline segments and ramp junctions would all operate at acceptable levels with the No-Build Alternative or the Build Alternatives.

Avoidance, Minimization, and Mitigation Measures

The following three mitigation measures are identified for existing plus project conditions. The exact need, and timing and design of these mitigation measures will be determined by the City of Sacramento based on ongoing monitoring.

Mitigation Measure TR-1: Widen Cosumnes River Boulevard between Center Parkway and Bruceville Road

Existing plus project conditions indicate that the City of Sacramento needs to widen Cosumnes River Boulevard between Center Parkway and Bruceville Road from one to two lanes in each direction. Implementation of this mitigation measure would provide LOS A operations. This mitigation measure is listed in the regional Metropolitan Transportation Plan (MTP) for 2025 as a future improvement. The mitigation measure is not currently listed in the City's Capital Improvement Program (CIP), as it is a five-year expenditure plan that provides a financial strategy for the City's infrastructure improvements. Given that funding is currently not allocated to this mitigation measure in the City's CIP, this mitigation measure is not certain.

Mitigation Measure TR-2: Widen the Eastbound Approach to the Freeport Boulevard/Meadowview Road Intersection To Provide One Additional Left-Turn Lane

Existing plus project conditions indicate that the City of Sacramento needs to widen the eastbound approach to the Freeport Boulevard/Meadowview Road intersection to provide one additional left-turn lane. With this improvement the eastbound approach to the intersection would have two left-turn lanes, one through lane, and a shared through/right-turn lane and would be substantially consistent with City General Plan policies regarding level of service on streets and roads. Implementation of this mitigation measure would provide LOS D operations during the a.m. peak hour. Based on preliminary review of this improvement, there appears to be sufficient pavement width in the eastbound direction to shift the through lanes and free up space for the eastbound left turn lane via restriping and minor signal modifications (moving the detector loops). The estimated cost for this measure is approximately $40,000 to $80,000.

Mitigation Measure TR-3: Improve the Center Parkway/Cosumnes River Boulevard Intersection

Existing plus project conditions indicate that the City of Sacramento needs to improve the Center Parkway/Cosumnes River Boulevard intersection by providing one left-turn lane, two through lanes, and one right-turn lane on the eastbound and westbound approaches to the intersection. Implementation of this mitigation measure would provide LOS D operations during the a.m. and p.m. peak hours. This project would be constructed as part of the widening of Cosumnes River Boulevard between Center Parkway and Bruceville Road and between Center Parkway and Franklin Boulevard, which is listed in the MTP for 2025 as a future improvement. The mitigation measure is not currently listed in the City's Capital Improvement Program (CIP), as it is a five-year expenditure plan that provides a financial strategy for the City's infrastructure improvements. Given that funding is currently not allocated to this mitigation measure in the City's CIP, this mitigation measure is not certain

The following two mitigation measures are identified for cumulative plus project conditions. The exact need, timing and design of this first measure will be determined by the City of Sacramento; however, the second measure is located outside the City limits and must be coordinated with Sacramento County and Caltrans.

Mitigation Measure TR-4: Widen Cosumnes River Boulevard between Center Parkway and Franklin Boulevard

Under cumulative plus project conditions, the City of Sacramento would need to widen Cosumnes River Boulevard between Bruceville Road and Franklin Road from two to three lanes in each direction to accommodate the projected traffic volumes at levels of service acceptable to the City of Sacramento. However, acquiring the right of way to accommodate this widening is not feasible and therefore the impact of the proposed action would be considered significant and unavoidable. There is adequate right of way to widen Cosumnes River Boulevard between Bruceville Road and Franklin Boulevard from one to two lanes in each direction. The segment from Bruceville Road to Center Parkway, including widening the intersection of Center Parkway/Cosumnes River Boulevard was identified in Mitigation Measure TR-1 and TR-3 and the impact of the project on this segment was considered significant and unavoidable. Widening the segment from Center Parkway to Franklin Boulevard to two lanes in each direction is listed in the MTP for 2025 as a future improvement. The mitigation measure is not currently listed in the City's Capital Improvement Program (CIP), as it is a five-year expenditure plan that provides a financial strategy for the City's infrastructure improvements. Given that funding is currently not allocated to this mitigation measure in the City's CIP, this mitigation measure is not certain.

Mitigation Measure TR-5: Installation of a Future Traffic Signal at the SR 160/Freeport Bridge Intersection

Cumulative traffic conditions with or without the project indicate a need to improve operations at this intersection. In order to improve operations at this intersection, a traffic signal would need to be installed and the northbound approach to the SR 160/Freeport Bridge intersection would need to be widened to provide a left-turn pocket. In addition, the southbound approach to the intersection would need to be widened to provide a right-turn pocket. Implementation of this mitigation measure would provide LOS C operations during the a.m. and p.m. peak hours; however, the SR 160/Freeport Bridge intersection is located outside the City of Sacramento city limits and improvements to this intersection must be reviewed and approved by the County of Sacramento and Caltrans. The City of Sacramento does not have jurisdiction to implement this mitigation measure.

3.8 Visual and Aesthetics

The information below is based on field review and photographs of the project area and vicinity. This section addresses issues related to visual quality and aesthetics. Background information on the methods used for visual impact assessment is provided below.

3.8.1 Regulatory Setting

Local Regulations

City of Sacramento General Plan

Conservation and open space goals and policies relevant to aesthetics in the City of Sacramento General Plan are listed below.

> **Conservation and Open Space Overall Goal:** Achieve and maintain a balance among the conservation, development and utilization of planned open space and natural resources.
>
> **Conservation and Open Space Goal B:** Retain the riparian woodlands and grassland vegetation along the waterways and floodways in North Natomas and South Sacramento insofar as possible.
>
> **Conservation and Open Space Policy 1:** Protect the wooded areas along the waterways and drainage canals insofar as possible.
>
> **Conservation and Open Space Policy 2:** Explore ways to conserve a modified floodplain environment along Laguna Creek in South Sacramento to the extent feasible.
>
> **Conservation and Open Space Goal E**: Establish development standards for water related open space lands throughout the City to enhance the visual amenities of these uses.
>
> **Conservation and Open Space Policy 2**: Explore ways to preserve the undeveloped open space areas and wildlife habitats along Dry Creek, Arcade Creek, Magpie Creek, the East Drainage Canal, the area south of Woodlake Park, Morrison Creek, Elder Creek, Laguna Creek, Sacramento Drainage Canal, and Beach Lake.

Sacramento County General Plan

Land use and open space policies relevant to aesthetics in the Sacramento County General Plan are listed below.

> **Land Use Policy LU-22:** Exterior building materials on nonresidential structures shall be composed of a minimum of 50 percent low-reflectance, non-polished finishes.
>
> **Land Use Policy LU-23:** Bare metallic surfaces such as pipes, flashing, vents, and light standards on new construction shall be painted so as to minimize reflectance.
>
> **Land Use Policy LU-24:** Require overhead light fixtures to be shaded and directed away from adjacent residential areas.
>
> **Land Use Policy LU-25:** Require exterior lighting to be low-intensity and only used where necessary for safety and security purposes.

Open Space Policy OS-1: Permanently protect, as open space, areas of natural resource value, including wetlands preserves, riparian corridors, woodlands, and floodplains.

Open Space Policy OS-2: Maintain open space and natural areas that are interconnected and of sufficient size to protect biodiversity, accommodate wildlife movement and sustain ecosystems.

3.8.2 Affected Environment

Background on Visual Analysis

The evaluation of changes in the visual environment is based on the existing visual features of the landscape, their quality and character, and their importance to people. The degree of impact depends both on the magnitude of change in the visual resource (i.e., visual character and quality) and on viewers' responses to and concern for those changes.

Numerous federal agencies and organizations have created or defined visual assessment methodologies to improve the quality and accuracy of visual analysis. The approach for this visual assessment is adapted from FHWA's visual impact assessment system (Federal Highway Administration 1983), in combination with other established visual assessment systems. These guidelines are easily transferred to other types of projects that could alter existing landscapes. The visual impact assessment process involves identification of the following.

- Relevant policies and concerns for protection of visual resources.
- Visual resources (i.e. visual character and quality) of the region, the immediate project area, and the project site.
- Important viewing locations and the general visibility of the project area and site using descriptions and photographs.
- Viewer groups and their sensitivity.
- Potential impacts, mitigation for impacts, and other recommendations.

Concepts and Terminology

Identification of a project area's existing visual resources and conditions involves three steps:

1. Objective identification of the visual features (visual resources) of the landscape.
2. Assessment of the character and quality of those resources relative to overall regional visual character.
3. Determination of the importance to people, or sensitivity, of views of visual resources in the landscape.

The aesthetic value of an area is a measure of its visual character and quality, combined with viewer response to the area (Federal Highway Administration 1983). The scenic quality component can best be described as the overall impression that an individual viewer retains after driving through, walking through, or flying over an area (U.S. Bureau of Land Management 1980). Viewer response is a combination of viewer exposure and viewer sensitivity. Viewer exposure is a function of the number of viewers, number of views seen, distance of the viewers,

and viewing duration. Viewer sensitivity relates to the extent of the public's concern for a particular viewshed. These terms and criteria are described in detail below.

Visual Character

Both natural and artificial landscape features compose the character of an area or view. Character is influenced by geologic, hydrologic, botanical, wildlife, recreational, and urban features. Urban features include those associated with landscape settlements and development, including roads, utilities, structures, earthworks, and the results of other human activities. The perception of visual character can vary substantially seasonally, even hourly, as weather, light, shadow, and the elements that comprise the viewshed change. The basic components used to describe visual character for most visual assessments are the elements of form, line, color and texture of the landscape features (U.S. Forest Service 1974, Federal Highway Administration 1983). The appearance of the landscape is described in terms of the dominance of each of these components.

Visual Quality

Visual quality is evaluated using the well-established approach to visual analysis adopted by FHWA, employing the concepts of vividness, intactness and unity (Federal Highway Administration 1983, Jones et. al. 1975). These terms are defined below.

- *Vividness* is the visual power or memorability of landscape components as they combine in striking and distinctive visual patterns.
- *Intactness* is the visual integrity of the natural and human-built landscape and its freedom from encroaching elements. This factor can be present in well-kept urban and rural landscapes, as well as in natural settings.
- *Unity* is the visual coherence and compositional harmony of the landscape considered as a whole. It frequently attests to the careful design of individual components in the landscape.

Visual quality is evaluated based on the relative degree of vividness, intactness, and unity, as modified by its visual sensitivity. High-quality views are highly vivid, relatively intact, and exhibit a high degree of visual unity. Low-quality views lack vividness, are not visually intact, and possess a low degree of visual unity. In addition to their use a descriptors, vividness, unity, and intactness are used more objectively as part of a rating system to assess a landscape's visual quality. Visual quality is evaluated using the equation: *Visual Quality = Vividness + Intactness + Unity.*

Vividness, intactness, and unity are evaluated independently. Each quality is assigned a rating from 0 to 10. On this scale, 0 equals very low quality, 4 to 6 equals average/moderate quality, and 10 equals very high quality. The overall rating for visual quality follows the same range. Ratings have been included in parentheses (e.g., VQ=2) in the visual quality description of the landscape units.

Viewer Exposure and Sensitivity

The measure of the quality of a view must be tempered by the overall sensitivity of the viewer. Viewer sensitivity or concern is based on the visibility of resources in the landscape, proximity of viewers to the visual resource, elevation of viewers relative to the visual resource, frequency

and duration of views, number of viewers, and type and expectations of individuals and viewer groups.

The importance of a view is related in part to the position of the viewer to the resource; therefore, visibility and visual dominance of landscape elements depend on their placement within the viewshed. A viewshed is defined as all of the surface area visible from a particular location (e.g., an overlook) or sequence of locations (e.g., a roadway or trail) (Federal Highway Administration 1983). To identify the importance of views of a resource, a viewshed must be broken into distance zones of foreground, middleground, and background. Generally, the closer a resource is to the viewer, the more dominant it is and the greater its importance to the viewer. Although distance zones in viewshed may vary between different geographic region or types of terrain, the standard foreground zone is 0.4 to 0.8 km (0.25 to 0.5 mi) from the viewer, the middleground zone from the foreground zone to 4.8 to 8 km (3 to 5 mi) from the viewer, and the background zone from the middleground to infinity (U.S. Forest Service 1974).

Visual sensitivity is dependent on the number and type of viewers and the frequency and duration of views. Visual sensitivity is also modified by viewer activity, awareness, and visual expectations in relation to the number of viewers and viewing duration. For example, visual sensitivity is generally higher for views seen by people who are driving for pleasure; people engaging in recreational activities such as hiking, biking or camping; and homeowners. Sensitivity tends to be lower for views seen by people driving to and from work or as part of their work (U.S. Forest Service 1974, Federal Highway Administration 1983, U.S. Soil Conservation Service 1978).

Commuters and nonrecreational travelers have generally fleeting views and tend to focus on commute traffic and not on surrounding scenery. Therefore, they are generally considered to have low visual sensitivity. Residential viewers typically have extended viewing periods and are concerned about changes in the views from their homes. Therefore, they generally are considered to have high visual sensitivity. Viewers using recreation trails and areas, scenic highways, and scenic overlooks are usually assessed as having high visual sensitivity.

Judgments of visual quality and viewer response must be made based in a regional frame of reference (U.S. Soil Conservation Service 1978). The same landform or visual resource appearing in different geographic areas could have a different degree of visual quality and sensitivity in each setting. For example, a small hill may be a strong visual element on a flat landscape but be unremarkable in mountainous terrain.

Data Collection

The following methods of data collection were used to evaluate the visual character of the project area, assess the quality and character of the visual resources, and describe views of and from the project site.

- Ground-level reconnaissance, including field observation from adjacent residences, roadways, recreational resources, and the project site.
- Interpretation of general site photographs, as well as regional visual context.

- Review of the proposed action in regard to compliance with state and local ordinances and regulations and professional standards pertaining to visual quality.

Regional Visual Character

The project corridor, located south of downtown Sacramento, extends east from Freeport Boulevard, through flat, open space, and terminates at Franklin Boulevard. A mix of agricultural, developed, and natural landscapes characterize the project region. Water features in the project region include Morrison and Union House Creeks within the project area, and the Sacramento River west of the project area.

The corridor extends through two basic character zones divided by I-5, which runs north to south and bisects the corridor area. Development occurs along most of I-5. From Freeport Boulevard to I-5, there are some agricultural lands still present, but almost the entire western portion of the corridor is a developed landscape composed of residential, commercial, and light industrial uses. These developments include single-family dwellings, a golf course, and small stores and restaurants. From I-5 to Franklin Boulevard, open space, consisting of mainly fallow agricultural lands, characterizes the project area. Much of this area is already planned for future development, including the Delta Shores project, which will be a mixed-use development. Currently much of the land is composed of agricultural land and grasslands with a sparse mix of shrubs and trees.

Landscape Units and Key Viewpoints

Five general landscape units (1 to 5) were identified as having views of the project area. These landscape units were derived from five key viewpoints: (1) Freeport, (2) I-5, (3) the Stonecrest Avenue overcrossing, (4) Meadowview community, and (5) Franklin Boulevard/Cosumnes River Boulevard intersection. Figures 3.8-1 through 3.8-5 identify the locations used in this analysis. Figures 3.8-6 through 3.8-9 provide visual simulations of various project features.

Landscape Unit 1 (Freeport)

Landscape Unit 1 includes many residences and commercial developments along the east side of Freeport Boulevard that have backyards that face east towards I-5, with a northeast view of Stonecrest Avenue overcrossing. In addition, a dirt path provides north-south access for anyone exploring the area. Viewers in this unit include residents, tourists, business owners, and employees. Many of the backyards and lots are surrounded by 1.8-m-high (6-ft-high) or taller wooden fences, or similarly tall trees and shrubs, preventing any view of I-5 or any construction that would occur on what is now the Stonecrest Avenue overcrossing. However, some residences and commercial lots do not have view-hindering fencing. Foreground and middleground views from these areas are completely unobstructed because much of the eastern land of Freeport is agricultural and fallow during some seasons (Figure 3.8-1, Photos 1 and 2). Background views are obstructed by I-5, so viewers in Landscape Unit 1 would not have clear views of road construction to the east of I-5. Construction of the new I-5 interchange, where the Stonecrest Avenue overcrossing currently stands, would be highly visible to viewers in this area. Residential viewers typically have extended viewing periods and are concerned about changes in the views from their homes. Therefore, they generally are considered to have high visual sensitivity. However, current views from this area are of I-5, a busy north-south thoroughfare through the area, and the Stonecrest Avenue overcrossing. Because of the presence of I-5 and the

Stonecrest Avenue overcrossing, visual quality is moderate (VQ=3). Vividness, intactness, and unity are all moderate (V=3, I=3, U=3).

Landscape Unit 2 (Interstate 5)

Landscape Unit 2 includes portions of I-5 directly north and south of the Stonecrest Avenue overcrossing. Viewers in this unit are limited to travelers on I-5. For travelers on I-5, foreground views lack visual obstructions. Views consist of the paved road, traffic, and the Stonecrest Avenue overcrossing to the north and south, and open-space grass and shrublands to the east. Middleground views to the east are open-space grass and shrublands and intermittent trees (Figure 3.8-2, Photo 3). Construction of the new I-5 interchange would be highly visible to travelers on I-5 because it would cross directly over I-5 and traffic flow might be slowed during some construction. Views of construction of the connection from Franklin Boulevard to I-5 would be more limited because much of the construction would be farther east than travelers could clearly detect while driving at highway speeds. During commute hours, when speeds are reduced, views would be less obstructed and viewers would be able to see some of the construction occurring in the middleground and possibly the background. Commuters and nonrecreational travelers have generally fleeting views and tend to focus on commute traffic, not on surrounding scenery, and therefore are generally considered to have low visual sensitivity. Visual quality is moderate (VQ=3). Vividness (V=3), intactness (I=3), and unity (U=3) are all moderate.

Landscape Unit 3 (Stonecrest Avenue Overcrossing)

Landscape Unit 3 includes east-facing views from the Stonecrest Avenue overcrossing. Viewers in this unit are limited to pedestrians and vehicle travelers using the Stonecrest Avenue overcrossing as a scenic outlook or for travel to the short, unpaved road that parallels the east side of I-5 for several miles to the south. Because of the elevated character of the overcrossing, foreground and middleground views are generally unobstructed. Background views are somewhat obstructed by an intermittent tree line through the open space lands. Foreground and middleground views currently include some areas of dumped trash and overhead power lines (Figure 3.8-2, Photo 4, and Figure 3.8-3, Photo 5). During construction of the interchange, the Stonecrest Avenue overcrossing would not be accessible because it would be included in the construction. Construction of the road extension from Franklin Boulevard to I-5 would be visible from the Stonecrest Avenue overcrossing if access to the overcrossing is not restricted during construction. It is likely that access to the overcrossing would be restricted during the entire construction process, and therefore viewers would not have access to these views during construction. After completion of the proposed action, vehicle travelers traveling east over the new interchange would have an elevated view of the open space lands to the east of I-5. Foreground and middleground views will be generally unobstructed, and travelers will see the east-west road extension traversing through open space lands on either sides. Background views may still be obstructed by tree-line. Visual quality of this view is currently moderate (VQ=4). Vividness, intactness, and unity are all moderate (V=4, I=3, U=4).

Landscape Unit 4 (Meadowview Community)

Landscape Unit 4 includes south-facing views from some residences in Meadowview (residential areas south of downtown Sacramento). Some residents of the neighborhoods in this area have relatively unobstructed foreground views of the open space and agricultural lands to the south through which the project would traverse. Middleground views are also generally unobstructed

Photo 1. North-east facing view of Stonecrest bridge, as seen from the east edge of the town of Freeport. Interstate 5 traverses below the bridge in a North-South direction.

Photo 2. East facing view from the Town of Freeport, including foreground view of fallow agricultural land and middleground view of traffic on Interstate 5 and overhead power lines. Background views are obstructed by these elements in the middleground and the lack of topographical variation.

01120.01 EISEIR (01/04)

Figure 3.8-1
Representative Photos

Photo 3. North-facing view of Stonecrest bridge, as seen from Interstate 5.

Photo 4. East facing view of open space to the east of Interstate 5, as seen from Stonecrest bridge. Note the undeveloped character and relative flatness of the landscape.

01120.01 EIS/EIR (01/04)

Figure 3.8-2
Representative Photos

Photo 5. South-east facing view of open -space lands to the southeast of Intestate 5, as seen from Stonecrest bridge, similar to Figure 4.

Photo 6. South-facing view of open space seen from the southern end of Detroit Blvd., South Sacramento.

01120.01 EIS/EIR (01/04)

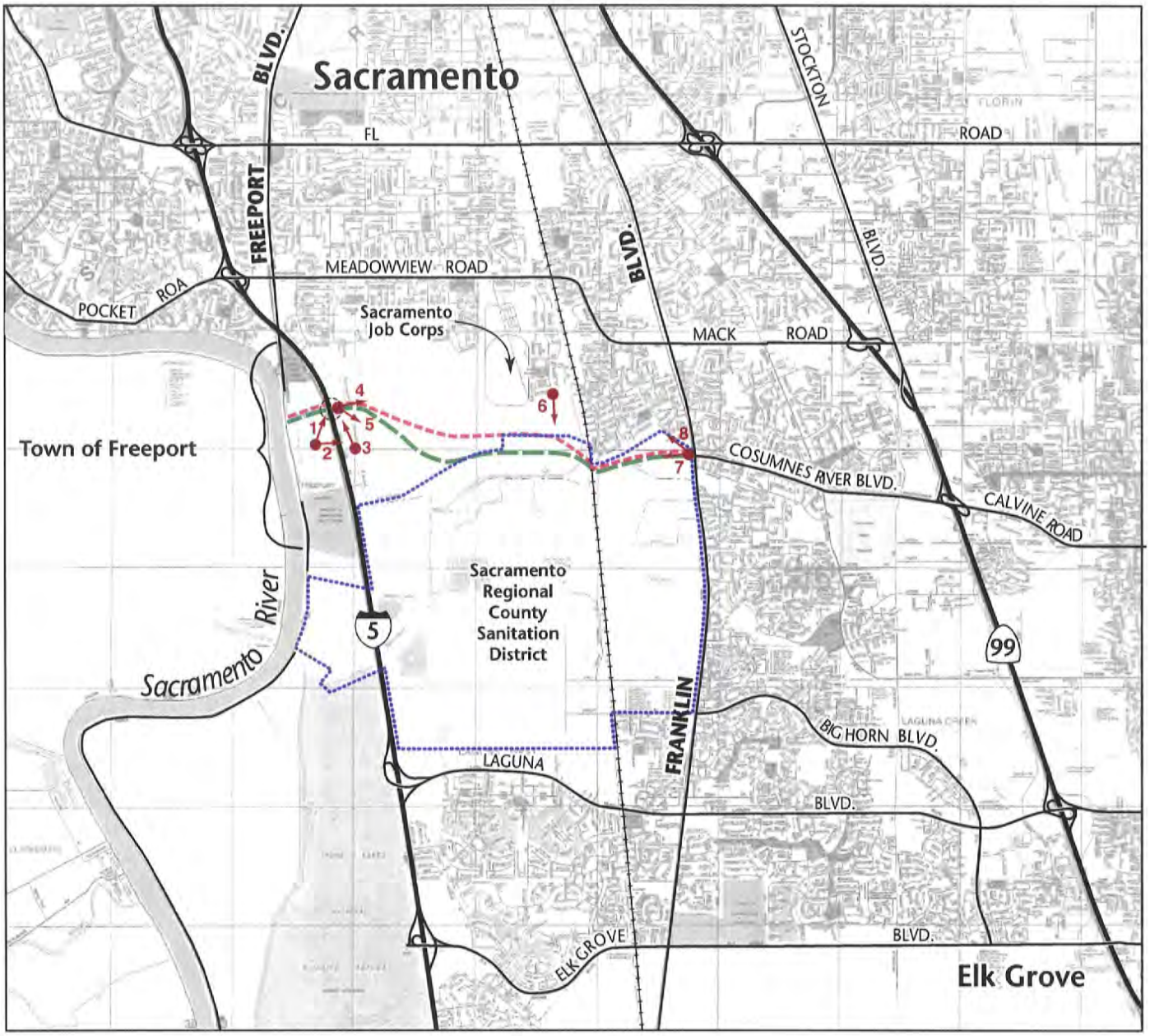
Figure 3.8-3
Representative Photos

Photo 7. West-facing view from current terminus of Cosumnes River Blvd. at Franklin Blvd. Open grasslands with scattered shrubs and trees in the mid-ground and back-ground. Power lines traverse the land in a north-south direction

Photo 8. North-west facing view from current terminus of Cosumnes River Blvd. at Franklin Blvd. Notice the residential housing in the middleground, and the fenced utility area in the right edge of the photograph.

01120.01 EISEIR (01/04)

Figure 3.8-4
Representative Photos



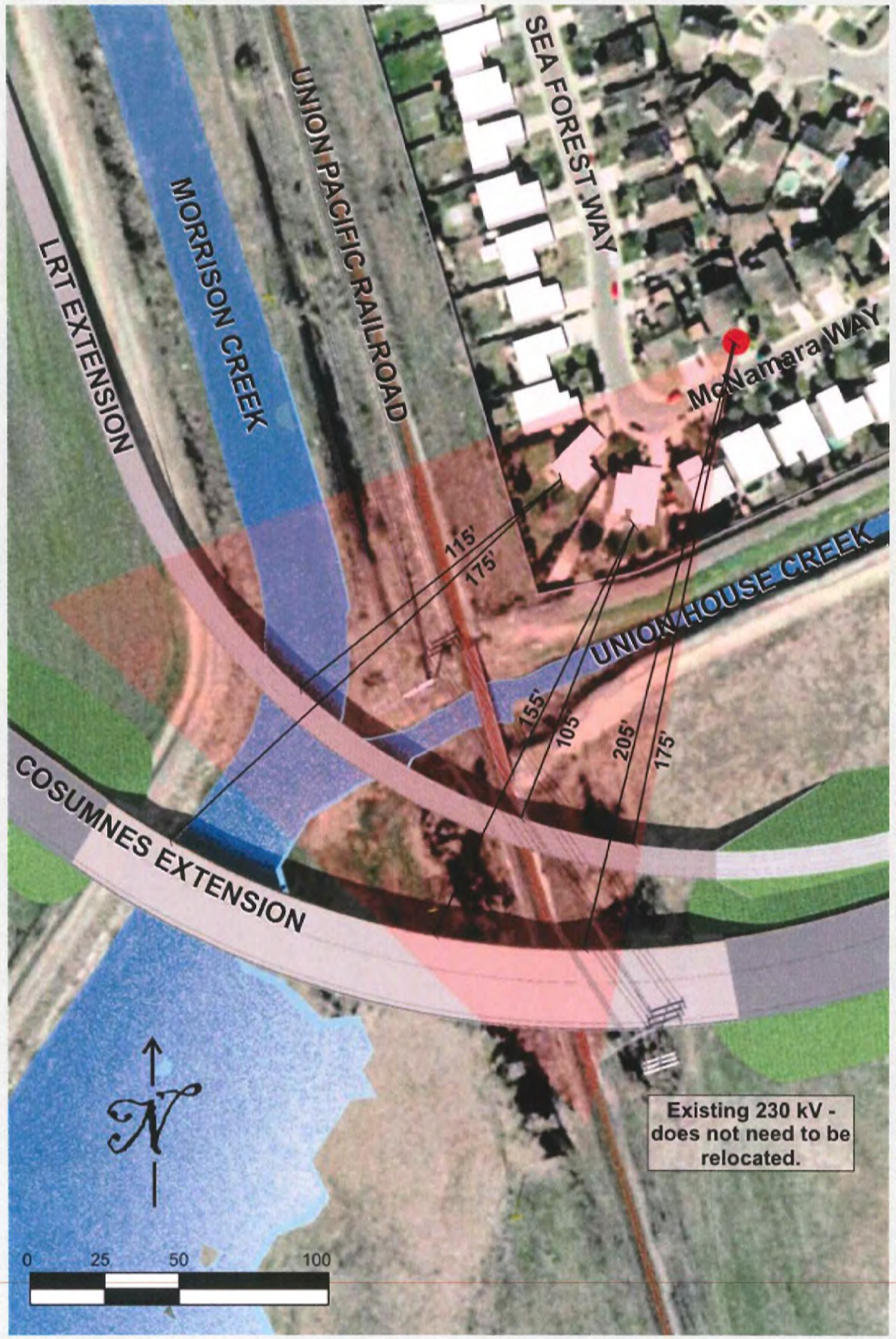
Legend

- Alternative A: North Alignment (Preferred)
- Alternative B: South Alignment
- Proposed Interchange Location
- SRCSD Boundary
- 8 Photo Point Location

N

0 4,000 Feet

Figure 3.8-5
Photo Index Map
I-5/Cosumnes River Boulevard Interchange Project



01120.01 EIS/EIR

Figure 3.8-6
Location of Visual Simulation

01120.01 EIS/EIR

Figure 3.8-7
Existing Conditions

Figure 3.8-8
Visual Simulation with Road

01120.01 EIS/EIR

01120.01 EIS/EIR

Figure 3.8-9
Visual Simulation with Road and Light Rail Train

in several areas. These views are of open space/agricultural lands with shrubs and trees sparsely located throughout (Figure 3.8-3, Photo 6).

Other neighborhoods in southern Sacramento do not have a clear view of the project area. Construction of homes in these areas has frequently occurred with very little or no space between each home. In addition, 3- to 3.7-m-high (10- to 12-ft-high) walls can be found in several locations between homes, completely obscuring visual access to the open space lands. Levees and chain-link fencing adjacent to Union House Creek also prevent Meadowview residents from viewing the open space lands unless they live in one of the homes that border the open space lands and can view the lands directly from backyards or windows. Views from these areas would be similar to those viewed from neighborhoods with unobstructed views (described above).

In general, views are seen by residents with homes directly adjacent to the open space lands, but not by many residents of the rest of the neighborhoods bordering the open space lands. The views seen by residents adjacent to the lands are of moderately high visual quality (VQ=5.7). Vividness is low to moderate (V=3), while intactness and unity are high (I=7, U=7).

As discussed in Chapter 2, the Sacramento Regional Transit District (RT) is constructing a 17.7-km (11-mi) extension of its light rail system from downtown Sacramento to Elk Grove. The second phase of the project, a segment of which is located is within the limits of the proposed action area, would extend light rail from Meadowview Road to the vicinity of Calvine/Auberry Roads. Near Morrison Creek, the light rail alignment would transition from the west side of the UPRR right-of-way to the east side via an aerial structure over the UPRR tracks. The elevated structure would be approximately 396.2 m (1,300 ft) long by 9.1 m (30 ft) high with a maximum grade of 5%; the structure would cross over Morrison Creek and would likely be highly visible to viewers in Landscape Unit 4. Environmental review and preliminary engineering for the second phase is ongoing and anticipated to be completed by November 2004 (Smith pers. comm.). Figures 3.8-6 through 3.8-9 provide visual simulations of the road and light-rail structures from the Meadowview neighborhood.

Landscape Unit 5 (Franklin Boulevard/Cosumnes River Boulevard Intersection)

Landscape Unit 5 includes the Franklin Boulevard/Cosumnes River Boulevard intersection. Viewers in this area include pedestrians and vehicle travelers on Franklin and Cosumnes River Boulevards and some residents along the east side of Franklin Boulevard. East- and southeast-facing views are primarily of open space lands. Here, foreground views include grasslands with some shrubs and small trees. Utility/power lines also traverse the foreground view (Figure 3.8-4, Photos 7 and 8; see Figure 3.8-5 for a photo index map). Middleground views also consist of grasslands but have somewhat larger trees located in greater density. Overhead power lines running north-south cut through the middleground views. Background views end with a line of densely located trees. Northeast-facing views include some open space lands and the southern edges of a residential neighborhood. A utility area surrounded by green-slat chain-link fencing is located in these open space lands just west of Franklin Boulevard, in the foreground view facing east and northeast. Views in this landscape unit are of moderate visual quality (VQ=3). Vividness, intactness, and unity are all moderate (V=3, I=3, U=3).

Viewer Groups and Responses

The three major viewer groups of the proposed action are roadway users along I-5 (Landscape Unit 2), residents of Freeport (Landscape Unit 1), and Meadowview residents whose homes abut the open space lands to the south (Landscape Unit 4). Residents in Landscape Units 1 and 4 are most likely to be affected by the proposed action because of their proximity to the alternative alignments.

During commute hours, on I-5, single views could have long duration. However, viewers who frequently travel the freeway generally have low visual sensitivity to their surroundings. The passing landscape becomes familiar to these viewers, and their attention is typically not focused on the passing environment. At standard highway speeds during off-peak hours, views are of short duration and freeway users are fleetingly aware of surrounding traffic, roadsides, their immediate surrounding within the automobile, and other visual features.

Freeport residents are likely accustomed to the view of traffic, a roadway, and an overcrossing bridge. Construction of the I-5 interchange would be visible to these viewers in a location that is currently an existing overcrossing over a busy interstate highway. Public comments were related to concerns over the effect of opening up access to I-5 and the perceived increase in traffic on the "Delta River Town" character of the Freeport community (Jones & Stokes 2003d).

Meadowview residents are likely unaccustomed to construction and the traffic, noise, and visual obstruction of an elevated roadway (elevated over 30 feet above adjacent grade at the Morrison Creek and Union Pacific railroad over crossing) that would follow completion of the proposed action. These residents are most likely to be affected by the proposed action. Public comments have been generally supportive, with some concern expressed about the proposed action's potential to induce development of open space and the attendant increase in traffic. Specific comments about the visual character of the project location were not made by members of the public at the public meetings held regarding the proposed action (Jones & Stokes 2003d).

3.8.3 Impacts

Approach and Methodology

The analysis of visual and aesthetic effects is based on a qualitative assessment of the change in views at the key viewpoints identified above.

Build Alternative A: Franklin to Freeport North Alignment

Impact VIS-1: Temporary Visual Changes from Construction

Construction of this alternative would create temporary changes in views of and from the project area. Construction activities would introduce considerable heavy equipment and associated vehicles, including dozers, graders, scrapers, and trucks, into the viewshed of Landscape Units 1, 2, 4, and 5. Viewer groups in the project area and vicinity would not be accustomed to seeing construction activities and equipment; their sensitivity to such impacts would be moderate overall. No temporary construction easements or permanent right-of-way takes for this alternative would be required from residential parcels. Possible nighttime construction at the interchange location could present a temporary source of new light and glare to area residents if development has occurred close to the project area. Residences in the Delta Shores project may be constructed by the time this project is ready for construction and could potentially be affected.

The boundary of the Delta Shores project is between 0.1 mile (trending northeast) and 0.2 mile (due north) from the east edge of the I-5 interchange, and no dwellings would be constructed closer to the interchange. Mitigation has been identified for this effect (VIS-1).

Impact VIS-2: Permanent Changes in Light and Glare

New sources of light and glare would be introduced with construction and operation of the proposed action. There would be an additional lighting source in all areas of the proposed action because no lights are currently in place. Nighttime lights from streetlights along the new roadway, intersections, and interchange would be visible from all landscape units. Mitigation has been identified for this effect (VIS-1 and VIS-2).

Impact VIS-3: Permanent Changes to Views in Landscape Unit 1 (Freeport)

Existing conditions of views in Landscape Unit 1 are described above and shown in Figure 3.8-1, Photos 1 and 2. Permanent changes in views would be minimal from this landscape unit. Visual changes would include the construction of the proposed I-5 interchange where the existing Stonecrest Avenue overcrossing is located, as well as views of traffic traversing the new interchange after completion. Because the Stonecrest Avenue overcrossing is rarely used, additional traffic would change the view. As stated, residential viewers typically have extended viewing periods and are concerned about changes in the views from their homes. Therefore, they generally are considered to have high visual sensitivity. However, current views from this area are of I-5, a busy north-south thoroughfare through the area, and the Stonecrest Avenue overcrossing. The new interchange would be in the same location as the current overcrossing, at approximately the same height. Views from Freeport also currently include traffic on I-5. The new interchange would create additional views of traffic, but would not introduce an entirely new element into the view.

Impact VIS-4: Permanent Changes to Views in Landscape Unit 2 (Interstate 5)

Existing conditions of views in Landscape Unit 2 are described above and shown in Figure 3.8-2, Photo 3. Permanent changes in views would be the replacement of the Stonecrest Avenue overcrossing with the proposed I-5 interchange, at the same location and approximately the same height. Because the proposed roadway extension through the open space lands runs east-west, and I-5 runs north-south, views of the completed roadway would be minimal from I-5. During commute hours, when speeds are reduced, views would be less fleeting and viewers would be able to see part of the roadway extension in the middleground and possibly the background. Commuters and nonrecreational travelers have generally intermittent views and tend to focus on commute traffic and not on surrounding scenery. Therefore, they are generally considered to have low visual sensitivity.

Impact VIS-5: Permanent Changes to Views in Landscape Unit 3 (Stonecrest Avenue Overcrossing)

Existing conditions of views in Landscape Unit 3 are described above and shown in Figure 3.8-2, Photo 4, and Figure 3.8-3, Photo 5. Permanent changes in views would be the extension of the Stonecrest Avenue overcrossing road east to Franklin Boulevard through the open space lands. Viewers in this landscape unit would be vehicular users of the roadway extension. Because of the existing roadway character of this unit, viewers are accustomed to vehicles and a road in front of them. Views on either side of the roadway would be of natural open space and fallow

agricultural lands. These views would be generally pleasant for travelers along the roadway extension.

Impact VIS-6: Permanent Changes to Views in Landscape Unit 4 (Meadowview Community)

Existing conditions in Landscape Unit 4 are described above and shown in Figure 3.8-3, Photo 6. Permanent changes to views in this landscape unit would include the extension of Cosumnes River Boulevard from Franklin Boulevard west through the open space lands that exist south of the residences in Landscape Unit 4. Depending on their distance from the alignment, some residences would have a view of the roadway extension to the south of the open space lands that would continue to exist between the residences and the roadway. Other residences are located at such a distance from the project area that views of the road would be in the background, with extensive open space lands between the viewers and the road. For viewers in residences close to the eastern part of the alignment, the view would be changed considerably. In addition to the general visual impact of the roadway extension, a new overcrossing would be built crossing Morrison Creek and the UPRR line, creating a new vertical element into the viewshed for residents in this landscape unit. The overcrossing will be elevated over 30 feet above the adjacent grade and could include an additional 8-14 feet of vertical visual obstruction from the soundwall discussed in Mitigation Measure NZ-1 in the Noise discussion in section 3.15. Relatively few viewers are likely to be affected.

Impact VIS-7: Permanent Changes to Views in Landscape Unit 5 (Franklin Boulevard/Cosumnes River Boulevard Intersection)

Existing conditions in Landscape Unit 5 are described above and shown in Figure 3.8-4, Photos 7 and 8. Permanent changes to views in this landscape unit would include the extension of Cosumnes River Boulevard from Franklin Boulevard west through the open space lands. The existing visual character of this intersection is generally urban, and the project will not change the urban character of the area.

Impact VIS-8: Consistency with Local Visual Policies

Local visual policies, described above, generally call for protecting open space and habitats and minimizing the effect of new construction on existing neighborhoods. Vegetation removal would occur only as necessary for construction of the proposed action and is limited to primarily ruderal groundcover vegetation. Vegetation and habitat surrounding the project alignment would be maintained to the extent feasible. Aside from removal of vegetation within the boundaries of the project alignment, the remaining open space lands will not be encroached upon by the proposed action. Mitigation has been identified for this effect (VIS-2 and VIS-3).

Build Alternative B: Franklin to Freeport South Alignment

The impacts under this alternative would be the same as those described for Build Alternative A.

No Build Alternative (No Project)

The No Build Alternative would not alter the views from any of the landscape units in the area. Existing conditions would remain the same.

3.8.4 Avoidance, Minimization and Mitigation Measures

Mitigation Measure VIS-1: Prepare and Implement a Lighting Plan

The City will require the contractor to prepare a lighting plan that demonstrates that project lighting and vehicle lights from vehicles traveling on the roadway will not increase ambient nighttime lighting conditions for surrounding residential properties by more than 0.5-foot candles, the recommended level of illumination for a walkway along a residential roadside. Designs for shields and directional lighting will be included in this plan. Shields and directional lighting will be used to minimize the distance at which light emanating from the proposed action is visible and to mitigate the effects of glare. In particular, the residential areas will be shielded from lighting effects to the extent feasible. The following points provide additional detail on luminaries to be incorporated into the lighting plan.

1. Luminaires should be cut-off-type fixtures that cast low-angle illumination to minimize incidental spillover of light onto adjacent properties and open space. Fixtures that project upward and horizontally should not be used.
2. Luminaires should be shaded and directed away from the residential and open space areas adjacent to the project site.
3. Luminaire lamps should provide good color rendering, natural light qualities, and used only where necessary for safety and security purposes.
4. Luminaire mountings should be downcast and the height of placement minimized to reduce potential for backscatter into the nighttime sky and incidental spillover into adjacent properties and open space. Luminaire mountings should have nonglare finishes.

Mitigation Measure VIS-2: Use Low-Sheen and Nonreflective Surface Materials on Walls, Railing, and Light Standards

The City will require the contractor to design any retaining walls, railings, and light standards with low-sheen, nonreflective surface materials to reduce potential for glare.

Mitigation Measure VIS-3: Incorporate Design Characteristics to Minimize Visual Obtrusion

The City will require the contractor to consider and include design characteristics to minimize the visual mass and presence of constructed elements to the extent possible. Specifically, structural and vertical elements such as bridges, railings, abutments, piers, supports, and similar features will have a minimum profile to reduce visual intrusion and obstruction. Supports, piers, and railings will have an "open" structure wherever possible to facilitate views beyond (i.e., "transparency"). Vertical elements will be designed at even intervals and spacing to create aesthetic rhythm. Finished surfaces on all vertical features should have color and sheen that minimize contrast with the daytime sky.

Mitigation Measure VIS-4: Incorporate Aesthetic Treatments within the Roadway Corridor

The City will require the contractor to design the proposed action to provide aesthetic consideration to roadway features, including signage, safety devices, lighting, landscaping, shoulders, and other roadway hardware to the greatest extent possible. Plantings, materials, and finishes will be consistent with and complementary to the project context.

Mitigation Measure VIS-5: Provide Aesthetic Treatments to the Noise Barrier

The City will require the contractor to provide aesthetic treatments to the noise barrier, including landscaping and low-sheen and non-reflective surface materials. The finish should be matted and roughened, and the use of smooth troweled surfaces and glossy paint should be avoided.

3.8.5 Cumulative Impacts

Impact VIS-9: Cumulative Change in Viewshed

The proposed action would contribute to cumulative aesthetics impacts identified in the City of Sacramento General Plan Update EIR. The aesthetics impact identified by the EIR is stated below.

> Urbanization of 22,000 acres of currently vacant and agricultural land resulting in a change of many viewsheds. Intensification of the character of Sacramento as a major urban area.

The Sacramento General Plan Update EIR identifies this cumulative impact as unavoidably adverse with no mitigation available.

3.9 Cultural Resources

The information below is summarized from the historic property survey report, archaeological survey report, historic resources inventory report, and extended phase I (XPI) survey report (Jones & Stokes 2003b, 2003e, 2003b) and an electromagnetic survey report (Sikes and Tremaine 2002) of the project area. These reports are available for review at the City offices.

3.9.1 Regulatory Setting

Federal Requirements

National Historic Preservation Act Section 106

Section 106 requires that before beginning any undertaking, a federal agency must take into account the effects of the undertaking on historic properties and afford the Advisory Council on Historic Preservation (ACHP) an opportunity to comment on the action. The proposed action is considered a federal undertaking because of the City's potential application for federal funding. Because the proposed action must comply with Section 106, federal significance criteria are also applied in the following analysis. For federal projects, cultural resource significance is evaluated in terms of eligibility for listing in the NRHP. NRHP criteria for eligibility are defined as follows.

> The quality of significance in American history, architecture, archeology, and culture is present in districts, sites, buildings, structures, and objects of state and local importance that possess integrity of location, design, setting, materials, workmanship, feeling and association, and that:
>
> - are associated with events that have made a contribution to the broad pattern of our history;
> - are associated with the lives of people significant in our past;
> - embody the distinct characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
> - have yielded, or are likely to yield, information important in prehistory or history. (36 CFR 60.4.)

Local Regulations

City of Sacramento General Plan

The Preservation Element of the City of Sacramento General Plan has the overarching purpose to "retain and celebrate Sacramento's heritage and recognize its importance to the City's unique character, identity, economy, and quality of life." The following policies are relevant to the proposed action:

> **B. Resource Preservation**
>
> **Goal:** To protect and preserve important historic and cultural resources that serve as significant, visible reminders of the city's social and architectural history.

Major policy issues:

- Continued review of new development and alterations within areas that contain historic resources.
- Early intervention to provide for maintenance and upkeep of historic properties and resources.
- Revise Preservation Ordinance.
- Consider demolition as last resort to occur only after the City makes certain findings.

C. Inventory and Information

Goal: To expand and maintain an inventory of important historic and cultural resources and their settings and retain information important to their understanding.

Major policy issues:

- Expand the resources/properties involved in the City's preservation program citywide.
- Regularly update and expand the City's Historic Resources Inventory.
- Survey additional potential historic resources.
- Make information more accessible via electronic means and media exposure.

D. Awareness and Outreach

Goal: To foster public awareness and appreciation of the City's heritage and its historic and cultural resources.

Major policy issues:

- Recognize high quality rehabilitation and restoration work and awareness ceremonies.
- Increase awareness of economic benefits of preservation.
- Conduct and support expanded education programs of the City's history.

E. Archaeological Resources

Goal: To identify and protect archaeological resources that enrich our understanding of early Sacramento area.

Major policy issues:

- Improve the City's information base regarding known or potential archaeological resources.
- Set procedures for archaeological resources when they are discovered during excavation.
- Preserve and display archaeological artifacts.

F. Incentives

Goal: To provide incentives to encourage owners of historic properties to preserve and upgrade their properties.

Major policy issues:

- Support the use of appropriate federal, state, local, and private grants and tax credits to promote preservation.
- Promote heritage tourism as a form of economic development.
- Expand the range of economic incentives for preservation.

Sacramento Regional County Sanitation District Interceptor Master Plan

A portion of the project would be constructed on the SRCSD Bufferlands. The following environmental mitigation guidelines related to cultural resources are identified in the Interceptor Master Plan 2000 Draft EIR.

Environmental Mitigation Guideline 10-1a: Comply with all federal, state, and local regulations regarding the protection and preservation of cultural and paleontological resources.

Environmental Mitigation Guideline 10-1b: Complete project-specific cultural resources record searches and field surveys, as needed.

Environmental Mitigation Guideline 10-1c: Include consideration of paleontological resources during record searches and field surveys.

Environmental Mitigation Guideline 10-1d: Plan construction activities to avoid important cultural sites identified by record searches and field surveys, as feasible.

Environmental Mitigation Guideline 10-1e: Develop and implement an appropriate treatment plan to evaluate affected archaeological sites that cannot be avoided by construction.

Environmental Mitigation Guideline 10-1f: Develop and implement a paleontological resources treatment plan to evaluate paleontological resources that may be discovered during construction.

Environmental Mitigation Guideline 10-1g: Develop and implement a cultural resources and paleontological resources training program for construction personnel.

Environmental Mitigation Guideline 10-2: Consult with interested Native American people when conducting the record searches and field surveys to avoid and/or minimize impacts on ethnographic resources during construction, as feasible.

3.9.2 Affected Environment

Prehistory

Although the Central Valley was likely occupied and used by humans during the Pleistocene and early Holocene (14,000 to 8000 B.P.), the archaeological record of such use is sparse. The lack

of identified archaeological evidence during this period is understandable given that such evidence likely is deeply buried under accumulated gravels and silts, or has eroded away (Moratto 1984). The earliest archaeological evidence of human use of the Central Valley region dates from approximately 5000 B.P. The period from 8000 to 4000 B.P. is referred to as the Early Horizon. During this period, a generalized subsistence strategy is thought to have been replaced by a more specialized strategy. This intensification can be seen in what Fredrickson (1973) has identified as the Windmiller Pattern. Artifact assemblages and faunal remains at Windmiller sites indicate that a diverse range of resources was exploited, including seeds, a variety of small game, and fish.

The Middle Horizon dates from approximately 4000 to 1500 B.P. Sites from this period have also been found in the Central Valley. The adaptive pattern of this period that is found most frequently is called the Berkeley Pattern (Fredrickson 1973), although sites displaying Windmiller Pattern assemblages also have been dated to the Middle Horizon. The Berkeley Pattern differs from the Windmiller Pattern primarily in its increased emphasis on the exploitation of acorns as a staple. This exploitation is reflected in the more numerous and varied mortars and pestles. The Berkeley Pattern is also noted for its especially well-developed bone industry and technological innovations, such as ribbon flaking of chipped stone. During this period, flexed burials replaced extended burials and the use of grave goods generally declined (Moratto 1984).

The period between 1500 B.P. and the arrival of the Spanish in central California has been named the Late Horizon. The predominant pattern during this period is called the Augustine Pattern (Fredrickson 1973). This pattern is characterized by large village sites, increased evidence of acorn and nut processing, introduction and use of the bow and arrow, and use of clamshell disc beads as the primary medium of exchange. During the last part of the period, cremation became a common mortuary practice.

Ethnography

The proposed area is located in the territories of two Native American groups: the Nisenan and the Plains Miwok (Levy 1978; Wilson and Towne 1978). The uncertainty over this boundary derives from the fact that ethnographers often demarcated contact-period tribal boundaries in conflicting ways (Waechter 1993). The Nisenan and Plains Miwok speak languages classified as part of the Penutian linguistic stock, the largest Native American linguistic stock in California (Shipley 1978). Linguistic, ethnographic, and archaeological data suggest that Penutian-speakers entered California relatively late in time and had settled nearly half of the state by the end of the eighteenth century (Moratto 1984:537 to 539; Waechter 1993:5). Summary descriptions of Nisenan and Plains Miwok cultures are presented below.

Nisenan

Nisenan territory included lands just north of Freeport, through which the southwestern portion of the project area extends. The smallest Nisenan social and political unit was the family. Each extended family was represented by a family leader, who was called to council by a headman. The headman served as an advisor to a village. The headman of the dominant village in a cluster of villages (tribelet) had the authority to call on the aid of surrounding villages in social and political situations. The duties of the headman were to advise his people, call and direct special festivities, arbitrate disputes, act as an official host, and call the family leaders to council. The

position of headman was usually hereditary, but the position could be chosen. Women could serve in this position, if a suitable male relative was not available (Wilson and Towne 1978).

Nisenan settlement locations depended primarily on elevation, exposure, and proximity to water and other resources. Permanent villages were usually located on low rises along major watercourses. Village size ranged from three houses to 40 or 50. Houses were domed structures covered with earth and tule or grass, and measured 3 to 4.6 m (10 to 15 ft) in diameter. Brush shelters were used in summer and at temporary camps during food-gathering rounds. Larger villages often had semi-subterranean dance houses, which were covered in earth and tule or brush, and had a central smokehole at the top and an east-facing entrance. Another common village structure was a granary, which was used for storing acorns (Wilson and Towne 1978).

The Nisenan occupied permanent settlements from which specific task groups set out to harvest the seasonal bounty of flora and fauna that the rich valley environment provided. The Valley Nisenan economy involved riparian resources, in contrast to the Hill Nisenan, whose resource base consisted primarily of acorn and game procurement. The only domestic plant was native tobacco, but many wild species were closely husbanded. The acorn crop from blue and black oaks was so carefully managed that it served as the equivalent of agriculture and could be stored against winter shortfalls in resource abundance. Deer, rabbit, and salmon were the chief sources of animal protein in the aboriginal diet, but many other insect and animal species were taken when available.

Plains Miwok

The Plains Miwok inhabited the lower reaches of the Mokelumne and Cosumnes Rivers and the banks of the Sacramento River from present-day Rio Vista to Freeport. The primary sociopolitical unit was the tribelet, comprising the residents of several base settlements and their associated seasonal camps. Each tribelet was independent and held and defended specific territories. The Hulpumne tribelet lived in the vicinity of Freeport. A village of the same name was located south of Freeport, and a subsidiary village, Nasune, was located across the Sacramento River (Bennyhoff 1977:165; Levy 1978).

The basic subsistence strategy of the Plains Miwok was seasonally mobile hunting and gathering. The only cultivated crop was tobacco, and the only domesticated animals were dogs. Plant foods included acorns, buckeyes, laurel nuts, hazelnuts, seeds, roots, greens, and some berries. Acorns, the primary staple, were gathered in fall and stored through winter. Seeds were gathered from May through August. An ample supply of seed-bearing annuals and forage for game was assured by intentional, periodic burning in August. The Miwok ate more meat in the winter, when only stored plant resources were available. Hunting was accomplished by bow and arrow, traps, and snares. Animal foods consisted of deer; elk, antelope, and rodents; waterfowl, quail, pigeons, flickers, and other birds; freshwater mussels and clams; land snails; fish; and insects. Salt was obtained from springs or through trade with people from the Mono Lake area (Bennyhoff 1977; Levy 1978).

Miwok technology included tools of bone, stone, antler, wood, and textile. Basketry items included seed beaters; cradles; sifters; rackets used in ball games; and baskets for storage, winnowing, parching, and carrying burdens. Other textiles included mats and cordage. Plains Miwok constructed several types of structures, including conical habitation structures fashioned

from tule matting, earth-covered semi-subterranean winter dwellings, acorn granaries, menstrual huts, sweathouses, and conical grinding huts over bedrock mortars. Two assembly structures were also built: large semi-subterranean structures for ritual and social gatherings, and circular brush structures used for summer mourning ceremonies (Levy 1978).

3.9.3 Impacts

Approach and Methodology

The effort to identify cultural resources that may be affected by the proposed action included a record search and literature review, consultation with interested parties, archaeological surveys, an investigation of potential historical buildings and structures, and a remote-sensing survey and test excavations in the area of potential effect. The archaeological area of potential effect (APE) was set at 61 m (200.0 ft) from either side of the proposed new right-of-way for the Cosumnes River Boulevard extension along its entire length, based on the engineering drawings. The vertical dimension of the APE was set at the maximum depth of excavation, which is 3 m (10 ft) for the roadway and utilities, except for the bridge column footing on the east side of the railroad structure, which could require driving piles approximately 15 m (50 ft) deep.

The architectural APE for buildings and structures was generally the same as the APE for archaeological resources because most of the project corridor crosses properties consisting of large parcels containing no buildings. The exception was in Freeport, where there were numerous buildings. There, the architectural APE includes whole parcels immediately adjacent to proposed roadway improvements along Stonecrest Avenue and Freeport Boulevard.

Record Search and Literature Review

A Jones & Stokes archaeologist conducted a record search of the project area and a 3.2-km (2-mi) radius of the project area at the North Central Information Center (NCIC) of the California Historical Resources Information System on April 13, 2001. An update review of historic property inventories and NCIC's base maps of previous cultural resources studies and recorded cultural resources was conducted on November 15, 2001. The record search indicated that approximately 10% of the project area had been adequately surveyed for cultural resources. No archaeological sites were identified in the project area as a result of the record search.

Research to support the architectural inventory and historical context for the proposed action was conducted at the Sacramento Archives and Museum Collection Center (SAMCC), California State Library, and Sacramento County Assessor's Office. Local residents were interviewed informally for property-specific historical information. Several themes guided the research and provided a framework for developing historical contexts. The research themes, which were selected based on the property types encountered during the fieldwork, include early exploration and settlement, transportation, agricultural development, and the Freeport townsite.

Consultation with Interested Parties

On July 23, 2001, Jones & Stokes requested a search of the sacred lands file from the Native American Heritage Commission (NAHC) in Sacramento. Jones & Stokes also requested a list of Native American contacts for the project area knowledgeable about Native American cultural resources and concerns pertinent to the proposed action. The sacred lands file search did not indicate the presence of Native American cultural resources in the project area. NAHC provided

Jones & Stokes with a list of Native American contacts for Sacramento County. Jones & Stokes contacted the individuals and organizations on the list via letters dated August 7, 2001. Follow-up telephone calls were made to all parties on the list on November 1, 2001.

Glen Villa, chairperson of the Heritage/Cultural Committee of the Ione Band of Miwok Indians, contacted Jones & Stokes by letter on August 30, 2001, to request a copy of the archaeological report once completed. Mr. Villa indicated that the Ione Band of Miwok Indians is aware of cultural resources in the project vicinity.

Consultation with Native Americans resulted in both general and specific information regarding cultural resources and Native American concerns pertinent to the proposed action. Three individuals recommended cultural resources monitoring during the construction phase. The general consensus among the individuals contacted is that the area bordering Freeport and the SRCSD Bufferlands is sensitive for the presence of buried cultural resources. Randy Yonemura and Leland Daniels stated that Native American burials were disturbed during construction of I-5 and the Verizon building, both of which are near the proposed action. All correspondence with Native Americans is on file at Jones & Stokes' Sacramento office.

Letters were also sent to the SAMCC, Sacramento History Museum, Portuguese Historical and Cultural Society, and California State Railroad Museum requesting input or comments on the potential for the proposed action to affect cultural resources.

Archaeological Survey

The APE was surveyed by archaeology crews walking systematic parallel transects spaced no more than 20 m (65.6 ft) between surveyors. In areas where crops reduced visibility to less than 40%, surveyors walked systematic parallel transects spaced 30 m (98.4 ft) apart to avoid excessive trampling. Some portions of the project area were identified as especially sensitive for the presence of cultural resources. These areas were investigated by walking systematic transects spaced less than 20 m (65.6 ft) apart. To improve efforts to identify archaeological sites that might have been hidden by vegetation, surveyors cleared vegetation at individually determined intervals with a trowel (1-m^2 scrapes), except for those areas covered by crops. The survey was conducted from November 5 to 7 and November 27 to 28, 2001. No archaeological resources were identified on the project site as a result of this survey (Jones & Stokes 2003b, 2003d).

Historical Resources Evaluation

Field investigations for the historical resources evaluation were conducted on October 11–12 and October 30, 2001. The buildings in Freeport along Freeport Boulevard between Stonecrest Avenue and Bartley Cavanaugh Golf Course were evaluated as a potential historic district, but were determined not to encompass an NRHP-eligible historic district nor a historical resource for the purposes of CEQA. Several linear features and properties within Freeport with buildings constructed before 1957 were evaluated for their individual historical significance, but none were located within the project APE. (Jones & Stokes 2003f.)

None of the four evaluated properties within the APE appear to be eligible for the NRHP and are not considered historical resources for the purposes of CEQA. The results of the study are summarized below; the California State Historic Preservation Officer concurred with these

findings in a July 21, 2004 letter to the North Region Environmental Branch of Caltrans (Appendix E).

House, 7979–7981 Freeport Boulevard (MR #1)

This complex is currently used for auto repair, though originally the property consisted of two semi-rural parcels. The complex consists of two houses, a pumphouse, a garage, and two equipment storage buildings. The property does not appear to meet the criteria for listing in the NRHP because it is neither historically nor architecturally significant. It is not associated with events or persons that have made a significant contribution to our history, and therefore, it does not meet Criteria A or B. All of the buildings are vernacular with minimal architectural style, and thus the property does not meet Criterion C. Finally, the overall integrity of the property is poor, due to intrusion by later buildings, particularly the main house (circa 1960).

Freeport Club/Ball House, 7985 Freeport Boulevard (MR #2)

This property consists of seven buildings: a former restaurant, a house, two cottages, a barn, a shed, and a windmill. The old restaurant fronts Freeport Boulevard, but the other buildings are set back from the road.. The property does not appear to meet the criteria for listing in the NRHP because it is neither historically nor architecturally significant. It is not associated with events or persons that have made a significant contribution to our history, and therefore it does not meet Criteria A or B. The buildings lack architectural distinction, and thus the property does not meet Criterion C. Although the historical integrity is fair, because this property does not possess historical or architectural significance, it does not appear to meet the criteria for listing in the NRHP.

House, 8013 Freeport Boulevard (MR #3)

This Ranch style house does not appear to meet the criteria for listing in the NRHP because it is neither historically nor architecturally significant. It is not associated with events or persons that have made a significant contribution to our history, and therefore it does not meet Criteria A or B. The building lacks architectural distinction and thus the property does not meet Criterion C. Although the historical integrity is good, because this property does not possess historical or architectural significance, it does not appear to meet the criteria for listing in the NRHP.

Sacramento to Stockton Branch of Western Pacific Railroad, approximately 0.5 mile west of Franklin Boulevard (MR #23)

The segment of Western Pacific Railroad line that crosses the APE is typical of a well-maintained rail line. It does not appear that the segment of the railroad within the APE would be a contributor to the significance of the Sacramento to Stockton Branch of the Western Pacific Railroad, should that property ever be determined eligible for the NRHP. The segment lacks integrity of design, materials, workmanship, setting, and feeling to its period of significance and therefore does not appear to be a contributor to any larger historic property, nor does it individually meet the criteria for listing in the NRHP.

Remote-Sensing Survey and Test Excavation

Background research indicated that the project area is sensitive for the presence of buried archaeological sites and the City conducted a remote-sensing (electromagnetic) survey of the APE (Sikes and Tremaine 2002). One archaeological site (Baked Clay Scatter 1) was identified during surface inspection and was described as eight baked clay fragments and five rocks that

may have been deliberately fired by human agency (Sikes and Tremaine 2002; Tremaine 2002), but could not be relocated during subsequent test excavations. Six locations were deemed sensitive for the presence of buried archaeological sites. Test excavations in these areas were conducted in April and May 2003 through a program of backhoe trenching, augering, and hand excavations. No archaeological materials were identified as a result of the investigation (Jones & Stokes 2003b, 2003e).

Build Alternative A: Franklin to Freeport North Alignment

Impact CR-1: Direct Damage to or Destruction of Baked Clay Scatter 1 during Construction of the Roadway

Based on the results of test excavations, it appears that Baked Clay Scatter 1 has been redistributed within the plow zone. It is unclear whether agricultural disturbance of the soils has destroyed the site or moved it elsewhere within or outside the project area. The lack of archaeological materials at Baked Clay Scatter 1's recorded location clearly indicates that it is not eligible for listing in the NRHP, nor does it meet the definition of historical resource or unique archaeological resource under CEQA. Therefore, construction of the roadway would not affect Baked Clay Scatter 1.

Impact CR-2: Inadvertent Direct Damage to or Destruction of Buried Archaeological Resources and Human Remains during Construction of the Roadway

The potential for buried archaeological materials and human remains to be present in the project area has been adequately explored, with negative results. Nevertheless, because only a relatively small portion of the project area has been subjected to subsurface testing, construction and staging activities associated with the proposed action have some potential to disturb buried, undiscovered archaeological sites and human remains. Mitigation is identified for this effect (CR-1 and CR-2).

Build Alternative B: Franklin to Freeport South Alignment

The impacts under this alternative would be the same as those described for Build Alternative A.

No Build Alternative (No Project)

The proposed action would not be constructed under this alternative. Therefore, there is no potential for this alternative to affect cultural resources.

3.9.4 Avoidance, Minimization and Mitigation Measures

Mitigation Measure CR-1: Stop Work If Archaeological Materials Are Discovered during Construction

If archaeological materials (e.g., chipped or ground stone, historic debris, building foundations, or nonhuman bone) are inadvertently discovered during ground-disturbing activities, the construction contractor will stop work in that area and within 30.5 m (100 ft) of the find until a qualified archaeologist can assess the significance of the find and develop appropriate treatment measures. Treatment measures shall be made in consultation with the City, FHWA, State Historic Preservation Officer (SHPO), and other consulting parties to the Section 106 review process. Treatment measures typically include development of avoidance strategies or mitigation of impacts through data recovery programs such as excavation or detailed documentation. If cultural resources are discovered during construction activities, the construction contractor and

lead contractor compliance inspector will verify that work is halted until appropriate treatment measures are implemented.

Mitigation Measure CR-2: Stop Work If Human Remains Are Discovered during Construction

If human remains of Native American origin are discovered during ground-disturbing activities, it is necessary for the City and FHWA to comply with state laws relating to the disposition of Native American burials, which fall within the jurisdiction of the NAHC (PRC 5097). If human remains are discovered or recognized in any location other than a dedicated cemetery, the City and FHWA will not allow further excavation or disturbance within 100 m (328.1 ft) of the find or any nearby area reasonably suspected to overlie adjacent human remains until both of the following occur.

1. The County Coroner has been informed and has determined that no investigation of the cause of death is required.
2. If the remains are of Native American origin:
   a. The descendants from the deceased Native Americans have made a recommendation to the landowner or the person responsible for the excavation work for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in PRC 5097.98, or
   b. NAHC was unable to identify a descendant or the descendant failed to make a recommendation within 24 hours after being notified by the NAHC.

3.9.5 Cumulative Impacts

Although the other projects that could occur in the project area and vicinity could have similar impacts as the proposed roadway project, cultural resources investigations have not revealed the presence of intact resources in the project area; therefore, no cumulative impacts are anticipated.

3.10 Hydrology and Floodplains

The information below is summarized in part from the preliminary hydrology report and impacts analysis prepared for the proposed action (Civil Solutions 2002; Plummer pers. comm.). This information is available for review at the City offices. This section addresses issues related to hydrology and floodplains in the project area.

3.10.1 Regulatory Setting

A variety of federal, state, and local agencies have jurisdiction over the project area. Important agencies and statutory authorities relevant to hydrology and floodplains are outlined below.

Federal Requirements

Federal Flood Insurance Program

The National Flood Insurance Act of 1968 and Flood Disaster Protection Act of 1973 were enacted to reduce the need for large, publicly funded flood control structures and disaster relief. The approach of these acts is to restrict development on floodplains. The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program (NFIP) to provide subsidized flood insurance to communities that comply with FEMA regulations limiting development on floodplains. FEMA issues Flood Insurance Rate Maps (FIRMs) for communities participating in the NFIP. These maps delineate flood hazard zones in the community.

Executive Order 11988

Executive Order 11988, "Floodplain Management," addresses floodplain issues related to public safety, conservation, and economics. It generally requires federal agencies constructing, permitting, or funding projects to avoid incompatible floodplain development, be consistent with the standards and criteria of the NFIP, and restore and preserve the natural and beneficial floodplain values.

State Regulations

California Reclamation Board

The California Reclamation Board is charged with controlling flooding along the Sacramento River and its tributaries in cooperation with the U.S. Army Corps of Engineers (Corps). The agency also cooperates with various agencies of the federal, state, and local governments in establishing, planning, constructing, operating, and maintaining flood control works. The board also maintains the integrity of the existing flood control system and designated floodways through its regulatory authority by issuing permits for encroachments.

Local Regulations

Sacramento County Department of Water Resources

The Sacramento County Department of Water Resources (SCDWR), part of the Sacramento County Public Works Agency, is the organization primarily responsible for drainage and flood control within urbanized unincorporated Sacramento County. SCDWR maintains and operates storm drainage and flood control facilities, including channel and ditch maintenance, pipeline maintenance, pumping plant maintenance and operations, levee maintenance, and minor remedial construction projects. SCDWR also designs, monitors, and funds the construction of

major remedial flood control and drainage facility improvements. Municipalities and local reclamation and flood control districts provide additional drainage and flood control services within their jurisdictions. SCDWR works with SAFCA in the development and implementation of regional flood control projects and revisions to floodplain mapping.

Sacramento Area Flood Control Agency

SAFCA was created in March 1989 to oversee local efforts in flood policy and protection and develop a land use planning policy within the 100-year floodplain. SAFCA is a joint powers agency which consists of memberships including the City, County, Sutter County, Reclamation District 1000, and American River Flood Control District. The purpose of SAFCA is to coordinate a regional effort necessary to ensure "a reasonable and prudent" level of flood control protection in developed and urbanized areas, and to provide assurances and participate in cost sharing for federal flood control projects. SAFCA is authorized to levy assessments, reassessments, special taxes, and to issue bonds to finance projects. Completion of projects authorized by Congress in 1999 would improve the area's flood protection to at least the 140-year level, which is considered moderate risk. SAFCA's ultimate goal is 200-year protection for the entire region, which is considered low risk.

City of Sacramento

The City is responsible for operating and maintaining the pumping plants and interior storm drainage system within its incorporated boundary. In addition, the City has responsibility for portions of the regional flood control levee system. The following City of Sacramento General Plan policies govern future development within the city.

Flooding Policy 1: Prohibit development of areas subject to unreasonable risk of flooding unless measures can be implemented to eliminate or reduce the risk of flooding.

Water Policy 1: Develop and adopt a comprehensive water policy for the City of Sacramento that is consistent with a long range adopted plan.

Water Policy 2: Develop and implement a financing strategy that the City can use to construct needed water facilities.

Water Policy 4: Give high priority in the Capital Improvements Program to funding infrastructure in highly depressed and designated infill areas.

Drainage Policy 1: Ensure that all drainage facilities are adequately sized and constructed to accommodate the projected increase in stormwater runoff from urbanization.

Drainage Policy 2: Coordinate efforts with County Public Works Department and other agencies as appropriate to provide adequate and efficient drainage facilities and connector lines to service the Rio Linda, North Natomas, and Laguna Creek areas of the City.

Drainage Policy 3: Target Capital Improvement Programs to fund drainage facilities in infill areas.

Drainage Policy 4: Require the private sector to form assessment districts to cover the cost of providing drainage facilities.

Drainage Policy 5: Design visible drainage facilities to be visually attractive.

Sacramento County

The following Sacramento County General Plan policies and implementation measures given govern future development within the project area.

Flooding SA-5. A comprehensive drainage study shall be prepared for urbanizing streams and their tributaries prior to any development within the 100-year floodplain defined by full watershed development without channel modifications. The plan shall:

a. Determine the future 100-year flood elevations associated with planned and full development of the watershed;

b. Determine the future 100-year floodplain boundaries for both flood elevations (planned and full development) based on minimum 2-foot contour intervals;

c. Assess the feasibility of gravity drainage into the existing flowline of the stream;

d. Assess the feasibility of alternative means of drainage into the stream;

e. Identify potential locations for sedimentation ponds and other stormwater treatment facilities;

f. Determine the minimum lowering of the stream bottom necessary and develop a channel design consistent with General Plan policies;

g. Determine the location and extent of marsh, vernal pool, and riparian habitat; and

h. Develop measures for protection and mitigation of natural habitats.

This policy is not applicable to downstream portions of urbanizing creeks identified as infill areas in Public Works Department policies of which the County does not intend to prepare a master drainage plan.

3.10.2 Affected Environment

Topography and Climate

The project area is undeveloped and relatively flat, with elevations ranging from 15.2 to 17.7 m (50 to 58 ft) above sea level (asl). It is located in the Sacramento Valley, which has a typical Mediterranean climate with cool, wet winters and dry, warm summers. Most annual precipitation falls as rain from November through April, with an average annual rainfall of 34.8 centimeters (cm) (13.7 in). The 10-year, 24-hour estimated precipitation amount is 6 cm (2.75 in) and the 100-year, 24-hour precipitation amount is 10.2 cm (4 in) for the project area (Western Regional Climate Center 1973).

Hydrology and Floodplains

Surface Water

The project area is located within the Sacramento River Basin. All surface waters in the project area ultimately drain or are pumped to the Sacramento River. The Water Quality Control Plan (Basin Plan) for the Central Valley Region (Central Valley Regional Water Quality Control Board 1998) describes the Sacramento River Basin covering 70,473.6 square kilometers (km^2) (27,210 square miles [mi^2]). The Sacramento River is the largest river in California, with discharge averaging approximately 17.9 million acre-feet (af) per year at Sacramento (City of

West Sacramento 2000), corresponding to an average flow of approximately 24,000 cubic feet per second (cfs). However, flow varies substantially and is directly correlated with the variations in precipitation. The highest flows occur in winter and spring, and the lowest flows occur in late summer and fall.

The project area is bordered on the west by the Sacramento River, and Morrison Creek flows through the northern portion of the project area. The proposed roadway parallels the north levee of Morrison Creek in an east-west direction with a varying offset from the creek of 182.9 to 1,097.3 m (600 to 3,600 ft). The proposed roadway would cross over Morrison Creek via a bridge near Morrison Creek's confluence with Union House Creek, where Morrison Creek turns to a north-south alignment. East of the bridge, the roadway parallels Union House Creek at an offset of 91.4 to 320 m (300 to 1,050 ft) to the intersection with Franklin Boulevard.

The project area is mostly undeveloped, with no improved drainage systems. Runoff from storm events currently infiltrates into site soils, or sheet flows into natural depressions and swales where it eventually drains into local surface water bodies such as Morrison and Union House Creeks and the Sacramento River.

A large wetland is located at the base of Morrison Creek. Stone Lake, a 45.3-ha (112-ac) body of water that is part of Stone Lake National Wildlife Refuge, is situated in the southeastern portion of the project area. The area also contains several intermittent streams and unnamed ponds. The surface hydrology of the project area and surrounding area is shown in the map exhibits in the preliminary hydrology report and impacts analysis (Civil Solutions 2002).

Groundwater

The project area overlies the Sacramento Valley Groundwater Basin, a subsection of the Greater Central Valley Basin. Within Sacramento County, groundwater has been used for agriculture and municipal purposes since the end of the nineteenth century. With the advent of modern pumping technologies, groundwater levels began to drop precipitously after 1940 because of agricultural withdrawals. Since the 1970s, efforts to reduce overdraft conditions have somewhat slowed the water-level decline, but overdraft conditions persist and a cone of depression in groundwater levels is centered over Elk Grove. The project area is located along the periphery of this cone.

The following well-defined freshwater-bearing geologic units from the Holocene and Pleistocene eras are found in the project area: Alluvium, Flood Basin Deposits, and the Victor Formation. Alluvium is characterized by sand, gravel, silt, and minor amounts of clay; permeability and surface infiltration rates range from moderate to high, and the formation yields large quantities of water to wells of shallow depth. Flood Basin Deposits are composed of fine-grained material, chiefly silt and clay; permeability, surface infiltration rates, and water yields are low. The Victor Formation consists of layers of sand, silt, and clay with enclosed ancient stream channel deposits of sand and gravel. Permeability is generally low except in ancient stream channels, and surface infiltration rates are low because of cemented subsoil horizons. Tertiary-Quaternary Continental Deposits are thick-bedded deposits of silt and clay with thinner zones of sand and gravel. Permeability and surface infiltration rates range from low to moderate, and deep wells obtain moderate yields from sandy layers (California Department of Water Resources 2003).

The depth to groundwater in the project area is generally 9.1 m (30 ft) or more below the ground surface (http://well.water.ca.gov). Groundwater levels are generally higher close to the Sacramento River (Water Forum 1999). Groundwater is recharged by surface waters, local precipitation, and contributions from peripheral basins. The portion of the project area adjacent to the Sacramento River has been identified in the Sacramento County General Plan as a groundwater recharge zone (County of Sacramento 1993).

Flooding

FEMA provides information on flood hazard and frequency for cities and counties on its FIRMs. FEMA identifies designated zones to indicate flood hazard potential. In general, flooding occurs along waterways, with infrequent localized flooding also occurring because of constrictions of storm drain systems or surface water ponding.

The proposed action is located in the 100-year floodplain, designated as an A99 zone on the Federal Emergency Management Agency (FEMA) Federal Insurance Rate Maps (FIRMs) that have been revised by a Letter of Map Revision effective May 22, 2000. Within the A99 zone, there are no requirements to elevate or flood proof.

The site is also within the Morrison Creek 100-year floodplain, an area identified by the Corps with a base flood elevation of 15.1 feet. However, the federal authorized South Sacramento Stream Group project currently being constructed when completed will provide the area with 100-year floodplain protection. Floodplains in the project area are shown in Figure 3.10-1.

3.10.3 Impacts

Approach and Methodology

The assessment of impacts on hydrology was based on the findings of the preliminary hydrology report and impacts analysis (Civil Solutions 2002; Plummer pers. comm.) and review of agency and statutory authorities relevant to hydrology and floodplains in the project area.

Build Alternative A: Franklin to Freeport North Alignment

Impact HYD-1: Increases in the Volume of Surface Runoff during Operation

The project area currently contains large amounts of open areas with pervious surfaces. Implementation of this alternative would result in the construction of impervious surfaces associated with the extension of the roadway, thereby preventing precipitation from infiltrating, causing it to pond or runoff. Development could therefore potentially increase runoff, causing flooding on site or contributing to a cumulative flooding impact downstream. In addition, the site runoff may be discharged more efficiently, decreasing the time it takes to reach downstream facilities and altering the existing peak flood timing.

The results of the preliminary hydrology report and impacts analysis report (Civil Solutions 2002) show that net water surface elevation increases in affected surface waters would be less than 0.6 cm (0.02 ft) for all storm events, and reduced by 0.3 cm (0.01 ft) during 100-year and 25-year storm events. Increases are projected to occur primarily between the confluence of Morrison and Union House Creeks and Franklin Boulevard. Displacement of 100-year flood storage volume would occur as a result of the installation of the bridge support columns over Morrison Creek. The report estimates approximately 40 af of volume would be displaced.

However, this displacement is negligible considering the limitations of the analysis methodologies, the abundance of existing flood storage in the project area, and the accuracy of the base mapping.

This alternative would change adsorption rates, the rate and amount of surface runoff, and potentially expose people or property to flooding hazards as a result of displacement of flood storage capacity. Mitigation is identified for this effect (HYD-1).

Impact HYD-2: Changes in Drainage Patterns during Construction

During the construction phase for the bridge crossing Morrison Creek and the UPRR line, some dewatering of Morrison Creek may be necessary. The proposed structure crossing above grade would consist of six pier lines, each with four 1.7-m-diameter (5.6-ft-diameter) columns for support. The placement of these columns would require temporary and partial dewatering of the creek to set them into place. Once the columns have been set into place, the creek channel will be restored to its original flow level and width. Although this dewatering would change drainage patterns, currents, and the course and direction of water movements, these effects would be short-term.

Impact HYD-3: Changes in Drainage Patterns during Operation

The project area is currently undeveloped, and surface water runoff follows natural watershed swale patterns. The proposed roadway would cross these swales and potentially interrupt the natural flow of surface water runoff. However, this alternative would include installation of culverts where the roadway crosses each swale that would permit natural runoff patterns to continue unimpeded. This design would result in no permanent changes in drainage patterns. The operation of this roadway under this alternative would not cause changes in the existing drainage patterns.

Impact HYD-4: Changes in Groundwater Quantity during Construction

Most of this alternative would occur in areas at which the water table is 9.1 m (30 ft) or more below the ground surface. As a result, excavation would not be anticipated to encounter groundwater. However, during construction of the bridge crossing Morrison Creek and the UPRR line, excavation may occur in areas of high groundwater and require dewatering. Dewatering could deplete local groundwater supplies. Construction could have impacts on the quantity of groundwater through interception of an aquifer by excavations and direct withdrawals. Mitigation has been identified for this effect (HYD-2).

Impact HYD-5: Changes in Groundwater Quantity during Operation

Most of the project area does not overlie any identified groundwater recharge areas, although a small portion of the project area falls within the groundwater recharge zone at the Sacramento River. However, the total area of this recharge zone that would be covered with impervious surface by this alternative would be very small and would have little effect on groundwater recharge capacity. In addition, this alternative would not use water for operations. The operation of this alternative is not expected to affect changes in the quantity of groundwater, either through direct addition or withdrawal.

Build Alternative B: Franklin to Freeport South Alignment

The impacts under this alternative would be the same as those described for Build Alternative A.

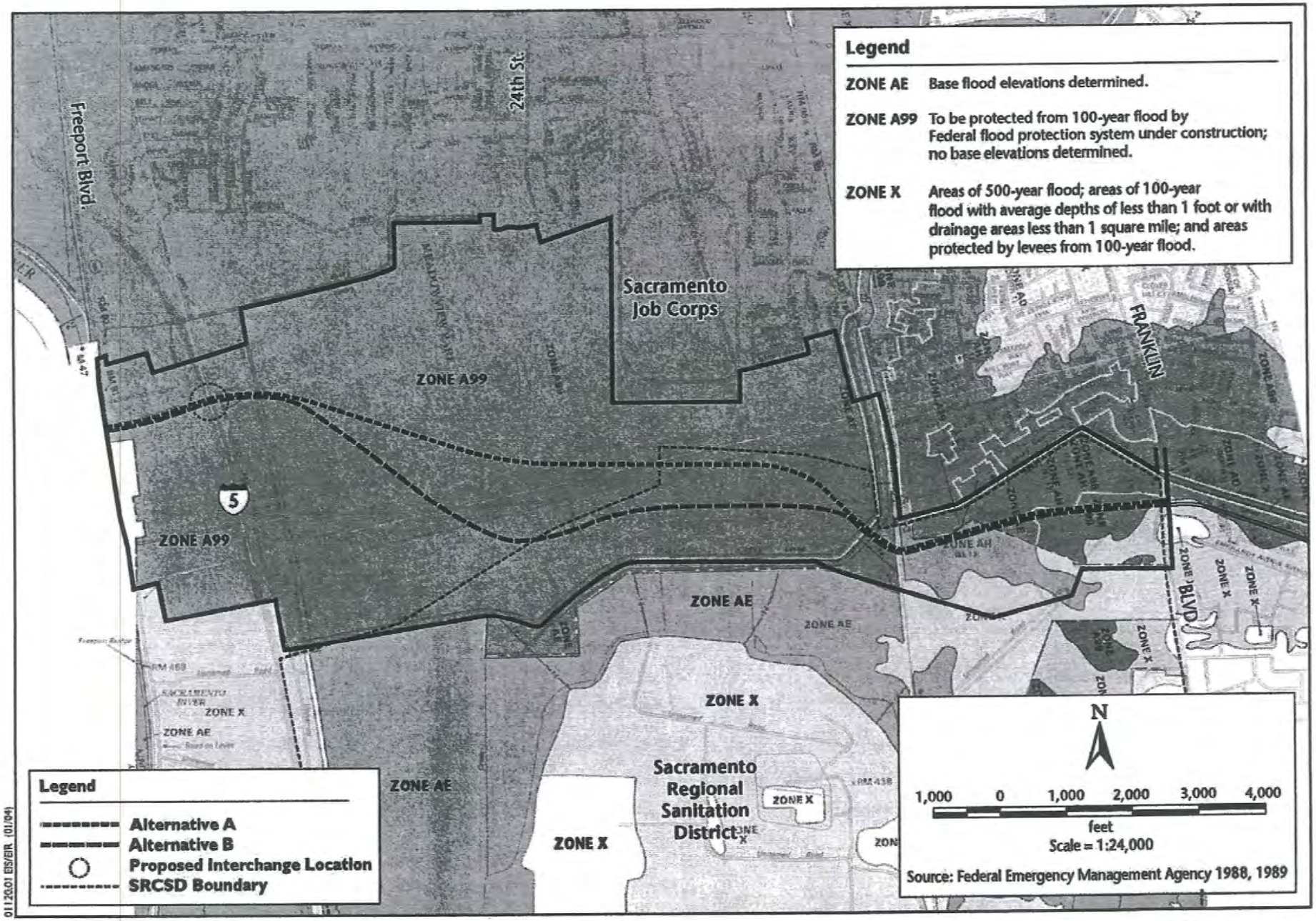


Figure 3.10-1
Floodplain Map
I-5/Cosumnes River Boulevard Interchange Project

01120.01 EIS/EIR (01/04)

No Build Alternative

Under this alternative, no action would be taken, and baseline conditions would continue. There would be no impacts.

3.10.4 Avoidance, Minimization and Mitigation Measures

Mitigation Measure HYD-1: Prepare and Implement a Drainage Plan for the Project

The City or its contractor will prepare and implement a drainage plan for the project that will allow the estimated 4,000-cfs increase in runoff volume to pass with minor constrictions at culvert headways. The City will verify in construction plans that these designs have been included, and verify their proper installation concurrently with project construction.

Mitigation Measure HYD-2: Return Groundwater-Related Dewatering Effluent to Aquifer

During dewatering, the City or its contractor will return all dewatering effluent to the aquifer. The method by which this will be achieved will be at the City's/contractor's discretion, but may include construction of infiltration basins. As a performance standard, all groundwater shall be returned to the aquifer. The City will review and approve all plans for this mitigation and perform monitoring during dewatering activities to verify that all groundwater returns to the aquifer.

3.10.5 Cumulative Impacts

Impact HYD-6: Cumulative Regional Increases in Runoff and Potential Flooding Hazards

The various alternatives would contribute to a cumulative increase in impervious surface when considering other existing or planned projects in the area. Therefore, the proposed action could contribute to a regional increase in runoff volumes and flooding.

3.11 Water Quality and Stormwater Runoff

The information below is based on Jones & Stokes file data and on public information available from the California Department of Water Resources (DWR) and State Water Resources Control Board (SWRCB). This section addresses issues related to water quality and stormwater runoff in the project area.

3.11.1 Regulatory Setting

A variety of federal, state, and local agencies have jurisdiction over the project area. Important agencies and statutory authorities relevant to water quality and flooding are outlined below.

Federal Requirements

Clean Water Act

The Clean Water Act (CWA) (33 USC 1251 to 1376), as amended by the Water Quality Act of 1987, is the major federal legislation governing water quality. The objective of CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters." Important applicable sections of the act are as follows:

- Sections 303 and 304 provide for water quality standards, criteria, and guidelines.
- Section 401 states that, for any activity that may result in a discharge to waters of the United States, applicants for federal permits must obtain certification from the state that the discharge will comply with other provisions of the act. Certification is provided by Regional Water Quality Control Boards (RWQCBs).
- Section 402 establishes the National Pollutant Discharge Elimination System (NPDES), a permitting system for the discharge of any pollutant (except for dredge or fill material) into waters of the United States. This permit program is administered by the RWQCBs and is discussed in detail below.
- Section 404 establishes a permit program for the discharge of dredged or fill materials into waters of the United States. This permit program is administered by the Corps and is discussed in more detail in section 3.17, "Wetlands and Other Waters of the United States."

State Regulations

Porter-Cologne Water Quality Act

The Porter-Cologne Water Quality Control Act (California Water Code 13000 et seq.) provides the basis for water quality regulation within California. The act requires a "Report of Waste Discharge" for any discharge of waste (liquid, solid, or otherwise) to land or surface waters that may impair a beneficial use of surface or groundwater of the state. The RWQCBs issue Waste Discharge Requirements (WDRs) resulting from the report. In practice, these requirements are typically integrated with the NPDES permitting process.

State Water Resources Control Board and Regional Water Quality Control Boards

SWRCB administers water rights, water pollution control, and water quality functions throughout the state, while the RWQCBs conduct planning, permitting, and enforcement activities. The project area is within the jurisdiction of the Central Valley RWQCB.

Beneficial Uses and Water Quality Objectives

The Central Valley RWQCB is responsible for the protection of beneficial uses of water resources within the Central Valley Region. Beneficial uses are the desired resources, services, and qualities of the aquatic system that are supported by achieving and protecting high water quality. The Central Valley RWQCB uses planning, permitting, and enforcement authorities to meet this responsibility. It has adopted the fourth edition of its Basin Plan (Central Valley Regional Water Quality Control Board 1998) to implement plans, policies, and provision for water quality management. Beneficial uses are described in the Basin Plan and designated for major surface waters and their tributaries, and groundwater. In addition to the identification of beneficial uses, the Basin Plan also contains water quality objectives (WQOs) that are intended to protect the beneficial uses of the basin. The Central Valley RWQCB has region-wide and water body/beneficial use-specific WQOs.

Beneficial uses of the surface waters of the Sacramento River include municipal, industrial, and agricultural supply; freshwater habitat; migration; spawning; and navigation. The Basin Plan does not identify beneficial uses for Morrison and Union House Creeks. However, beneficial uses of water bodies generally apply to their tributaries—in this case, the beneficial uses of the Sacramento River would apply to Morrison and Union House Creeks. However, no protected fish species occur in Morrison or Union House Creeks (U.S. Army Corps of Engineers 1998). The beneficial uses of the groundwater underlying the project area are municipal and domestic supply, industrial service and process supply, and agricultural supply.

WQOs for all surface waters in the region have been set concerning bacteria, bioaccumulation, biostimulatory substances, color, dissolved oxygen, floating material, oil and grease, population and community ecology, pH, salinity, sediment, settleable material, suspended material, sulfide, tastes and odors, temperature, toxicity, turbidity, and ammonia. WQOs for groundwater include standards for bacteria, chemical constituents, radioactivity, tastes and odors, and toxicity.

National Pollutant Discharge Elimination System Permitting

Caltrans Statewide NPDES Storm Water Permit. SWRCB adopted the Caltrans Statewide NPDES Storm Water Permit (Order No. 99-06-DWQ) on July 15, 1999. The permit covers all Caltrans facilities in the state. In compliance with this permit, a Statewide Storm Water Management Plan (SWMP) was developed by Caltrans to address stormwater pollution control related to highway planning, design, construction, and maintenance activities throughout the California. The SWMP describes the minimum procedures and practices that Caltrans uses to reduce the discharge of pollutants in discharges from storm drainage systems owned or operated by Caltrans. It outlines procedures and responsibilities for protecting water quality at Caltrans facilities, including the selection and implementation of Best Management Practices (BMPs). The proposed action would follow the guidelines and procedures outlined in the SWMP.

Construction Activity Permitting. The Central Valley RWQCB administers the NPDES stormwater permitting program in the Central Valley Region for construction activities.

Construction activities disturbing 0.4 ha (1 ac) or more of land are subject to the permitting requirements of the NPDES General Permit for Discharges of Storm Water Runoff Associated with Construction Activity (General Construction Permit). For qualifying projects, the project applicant must submit a Notice of Intent (NOI) to the RWQCB to be covered by the General Construction Permit prior to the beginning of construction. The General Construction Permit requires the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP), which must be completed before construction begins.

The SWPPP describes proposed construction activities, receiving waters, stormwater discharge locations, and BMPs (described below) that would be used to reduce project construction effects on receiving water quality. The component of the SWPPP most relevant to groundwater resources is a hazardous materials spill prevention and control program.

Best Management Practices

BMPs, as they relate to water quality, refer to a wide variety of measures taken to reduce pollutants in stormwater and other non–point source runoff. Measures range from source control, such as use of permeable pavement, to treatment of polluted runoff, such as detention or retention basins and constructed wetlands. Maintenance practices (e.g., street sweeping) and public outreach campaigns also fall under the category of BMPs. In general, data establishing the effectiveness of BMPs in reducing target pollutants is scarce. Further, the effectiveness of a particular BMP is highly contingent on the context in which it is applied and the method in which it is implemented. Expected effectiveness of BMPs is summarized in Table 3.11-1. As can be seen, BMPs are best used in combination to most effectively remove target pollutants.

Table 3.11-1. Expected Pollutant Removal Efficiency of Best Management Practices

Best Management Practice Type	Typical Pollutant Removal (Percent)				
	Suspended Solids	Nitrogen	Phosphorus	Pathogens	Metals
Structural					
Dry Detention Basins	30–65	15–45	15–45	<30	15–45
Retention Basins	50–80	30–65	30–65	<30	50–80
Constructed Wetlands	50–80	<30	15–45	<30	50–80
Infiltration Basins	50–80	50–80	50–80	65–100	50–80
Infiltration Trenches / Dry Wells	50–80	50–80	15–45	65–100	50–80
Porous Pavement	65–100	65–100	30–65	65–100	65–100
Grassed Swales	30–65	15–45	15–45	<30	15–45
Vegetated Filter Strips	50–80	50–80	50–80	<30	50–80
Surface Sand Filters	50–80	<30	50–80	<30	50–80
Other Media Filters	65–100	15–45	<30	<30	50–80
Construction Site					
Silt Fence	50–80				
Sediment Basin	55–100				
Sediment Trap	60				

Source: U.S. Environmental Protection Agency 1993, 1999.

California Fish and Game Code Sections 1600 to 1607

Under California Fish and Game Code Sections 1600 to 1607, Caltrans and other agencies are required to notify the California Department of Fish and Game (CDFG) prior to any project that would divert, obstruct, or change the natural flow or bed, channel, or bank of any river, stream, or lake. Preliminary notification and project review generally occur during the environmental

process. When an existing fish or wildlife resource may be substantially adversely affected, CDFG is required to propose reasonable project changes to protect the resource. These modifications are formalized in a "streambed alteration agreement" which becomes part of the plans, specifications and bid documents for the project.

Local Regulations

Sacramento County Department of Water Resources

The SCDWR Stormwater Quality section monitors pollutants in local creeks, assists other County departments in protecting water quality, and educates the public on ways to keep creeks and rivers clean. It is responsible for developing and implementing programs to reduce the discharge of pollutants from urban runoff to local receiving waters. The Cities of Sacramento, Folsom, Citrus Heights, Elk Grove, and Galt are co-participants with the County in this regional storm water management program.

Sacramento County General Plan Policies

The following Sacramento County General Plan policies and implementation measures given govern future development within the project area.

> **Water Quality Policy CO-10:** Development within newly urbanizing areas shall incorporate runoff control measures in their design or participate in an area-wide runoff control management effort consistent with the urban runoff management program developed by the Public Works Department.
>
> **Water Quality Policy CO-11:** Hazardous material shall not be stored in the 100-year floodplain in such a manner as to pose a significant potential for surface water contamination.
>
> **Water Quality Policy CO-12:** Roads and structures shall be designed, built and landscaped so as to minimize erosion during and after construction.

City of Sacramento Stormwater Quality Improvement Plan

The City of Sacramento Stormwater Quality Improvement Plan (SQIP) was created in July, 2003, and outlines the priorities and activities of the City's Stormwater Management Program for 2003-2008. Implementation of the City's Stormwater Management Program is conducted through the program management activities and seven program elements: construction, illegal discharge, industrial, new development, municipal operations, public education and outreach, and watershed stewardship.

3.11.2 Affected Environment

Surface Water Quality

Surrounding land uses largely affect surface water quality, with both point source and non–point source discharges contributing contaminants to surface waters. The project area primarily consists of undeveloped land and agricultural areas. Runoff from agricultural areas is characterized by constituents such as fertilizers, herbicides, and pesticides, and often contains high nutrient content and dissolved solids. Under the proposed action, these land uses would be converted to a roadway, with runoff constituents typical of urban runoff. Contaminants found in urban runoff include sediment, hydrocarbons and metals from road surfaces, pesticides, nutrients, bacteria, and trash. Stormwater discharge conveys precipitation from areas of

saturation or impermeable surfaces to low-lying collection areas and creeks. Stormwater flow often includes contaminants collected from surrounding lands uses.

Non–Point Source Pollution

During periods of wet weather, rain carries pollutants and soil particles from all parts of a watershed into surface-water bodies such as storm drains, streams, rivers, reservoirs, or marshes. In urban and agricultural settings, natural drainage patterns have been altered, and stormwater runoff and non-storm discharge (irrigation water, accidental spills, washdown water, etc.) picks up soil particles and contaminants from land surfaces and transports these pollutants into surface water and groundwater. The sources of these pollutants include parking lots, bare earth at construction sites, and agricultural and landscape sites. The total amount of pollutants entering aquatic systems from these diffuse, non-point sources is now generally considered greater than that from any other source, such as pipe discharges (point sources).

The impacts of non-point source pollutants in urban runoff on aquatic systems are many and varied. Polluted runoff can result in significant adverse impacts on aquatic ecosystems, public use, human health from groundwater and surface water contamination, damage to and destruction of wildlife habitat, decline in fisheries, and loss of recreational opportunities. Small soil particles washed into streams can smother spawning grounds and marsh habitat. Suspended particulates can restrict light penetration into water and limit photosynthesis of aquatic biota. Metals and petroleum hydrocarbons washed from roadways and parking lots may cause toxic responses in aquatic life or contaminate possible water supply sources such as reservoirs or aquifers.

Stormwater Runoff

Stormwater runoff in response to precipitation during the wet season may also influence stream water quality. Stormwater runoff has been documented to contain contaminants contributing to surface-water quality degradation and toxicity to aquatic organisms. Before entering a stormwater collection system and ultimately a water body in the project area, stormwater runoff can collect and transport pollutants including suspended solids (soils and small particles), fecal coliform, trace heavy metals, and organic pesticides. Studies of urban stormwater runoff have identified as many as 77 priority pollutants present in runoff.

Primary contributors of stormwater pollution are urban roadways and parking lots. Stormwater from these asphalt roadways and associated medians can contribute oil and grease, solid waste/detritus, and trace heavy metals such as copper from brake pads and cadmium from tires. Trace metals, although present in stormwater runoff, are unlikely to significantly contribute to aquatic toxicity because typical urban stormwater runoff is capable of complexing metals (binding metals to other solids). Complexing of trace metals often reduces the bioavailable fraction of metals able to elicit a toxic response.

The presence in stormwater runoff of herbicides and pesticides used for residential and agricultural pest control is also a significant concern. The presence in stormwater runoff of biostimulatory nutrients such as dissolved nitrate and phosphate from fertilizer is less of a concern, however, because of the reduced residence time for these substances in creeks during the high-flow winter wet season, increased dilution because of higher flows, and other limiting factors such as light availability.

Local Waterways

Sacramento River water quality is generally good. The river is used as a water supply for much of the state. Both Morrison and Union House Creeks are seasonal water bodies whose flows in the dry season often consist entirely of urban runoff. Therefore, these water bodies tend reflect the constituents of urban runoff discussed above.

Impaired Water Bodies

SWRCB, in compliance with the CWA Section 303(d), has prepared a list of impaired water bodies in California. The list includes a priority schedule for the development of total maximum daily loads (TMDLs) for each contaminant or "stressor" impacting the water body. Morrison Creek is identified in the 2002 Clean Water Act Section 303(D) List of Water Quality Limited Segments as an impaired water body for diazinon because of agricultural and urban runoff. The Sacramento River in this reach is listed for diazinon because of agricultural runoff, mercury from abandoned mines, and unknown toxicity (State Water Resources Control Board 2003).

Groundwater Quality

Groundwater in the project region is typically calcium magnesium bicarbonate or magnesium calcium bicarbonate. Other minor groundwater types include sodium calcium bicarbonate or calcium sodium bicarbonate in the vicinity of Elk Grove, and a magnesium sodium bicarbonate or sodium magnesium bicarbonate near the confluence of the Sacramento and American Rivers. TDS ranges from 24 to 581 milligrams per liter (mg/l) and averages 221 mg/l based. No known impairments or areas of contamination are found in the vicinity of the project area (California Department of Water Resources 2003).

3.11.3 Impacts

Approach and Methodology

The assessment of impacts on water quality and stormwater runoff was based on analysis of Jones & Stokes file data and on public information available from the California Department of Water Resources (DWR) and State Water Resources Control Board (SWRCB).

Build Alternative A: Franklin to Freeport North Alignment

Impact WQ-1: Erosion and Sedimentation during Construction

Construction activities introduce the potential for increased erosion and sedimentation, with subsequent direct effects on water quality. During site grading, trenching, and construction activities, areas of bare soil would be exposed to erosive forces for long periods of time. Bare soils are much more likely to erode than vegetated areas because of the lack of dispersion, infiltration, and retention properties created by covering vegetation. Construction activities involving soil disturbance, excavation, cutting/filling, stockpiling, and grading could result in increased erosion and sedimentation to surface waters.

Specific activities proposed with potential to generate construction-related water quality effects include the extension of Cosumnes River Boulevard, Morrison Creek/UPRR bridge overcrossing, and the I-5 interchange. For the bridge crossing, abutments would be set at the outside edge of the top of the levee (the top of the levee is approximately 3.7 m [12 ft] wide). If the inside edge of the top of the levee is the edge of the channel bank, then the two abutments would be located at approximately 3 m (10 ft) from the edge of the channel bank of Morrison

Creek. Falsework would be required for construction of the cast-in-place superstructure. Pier columns would be constructed across the creek and railway, with a total of 20 piers for support. It is anticipated that water would be diverted around the construction site during construction. However, work directly in a stream channel is of particular concern because of the direct mechanism for contaminants to reach surface waters.

Construction phase activities may result in potential discharge into surface waters and may have a resulting alteration of surface water quality; however, the City has committed to implement measures to address discharge effects (see Section 3.22.3 "Water Quality Environmental Commitments," regarding the Storm Water Pollution Prevention Program ([SWPPP]).

Impact WQ-2: Releases of Hazardous Materials during Construction
Accidental spills of hazardous vehicular and equipment fluids may occur during construction. These potential spills, if not contained, could contaminate and significantly alter the quality of surface waters or groundwaters. However, the City has committed to implement measures to address potential spill hazards (see Section 3.22.3, "Water Quality Environmental Commitments"). Mitigation has been identified for this direct effect (WQ-1).

Impact WQ-3: Degradation of Water Quality from Dewatering during Construction
Although most of the construction activities are anticipated to occur above the local water table, excavation near streams could occur below the water table and require dewatering. Dewatered effluent is likely to contain sediment and could potentially contain construction-related contaminants such as oils and greases because of contact with construction equipment. Discharge of dewatering effluent to either surface water or groundwater could adversely affect surface and groundwater quality. However, the City has committed to implement measures to address water quality degradation (see Section 3.22.3 "Water Quality Environmental Commitments").

Impact WQ-4: Degradation of Surface Water Quality during Operation
As discussed under Impact HYD-1, project facilities are expected to result in a slight increase in drainage flows because of runoff from increased amounts of impervious surfaces. In addition, as discussed previously, roadways are anticipated to contribute a variety of non–point source contaminants to surface runoff. Therefore, this alternative could increase both stormwater and non-stormwater runoff, transporting contaminants to adjacent receiving waters. Contaminated runoff associated with project operations could reduce surface water quality. Mitigation has been identified for this direct effect (WQ-2).

Impact WQ-5: Operational Phase Degradation of Groundwater Quality
This alternative would not use groundwater for operation, nor would it provide a substantial source of groundwater recharge, as the road design will direct all stormwater runoff into the storm drain system. Therefore, operation of this roadway is not expected to cause changes in groundwater quality.

Build Alternative B: Franklin to Freeport South Alignment
The impacts under this alternative would be the same as those described for Build Alternative A.

No Build Alternative
Under this alternative, no action would be taken, and baseline conditions would continue.

3.11.4 Avoidance, Minimization and Mitigation Measures

Mitigation Measure WQ-1: Implement Measures to Maintain Groundwater Quality

If an appreciable spill has occurred and results determine that project activities have adversely affected groundwater quality, a detailed analysis will be performed by a Registered Environmental Assessor to identify the likely cause of contamination. This analysis will conform to American Society for Testing and Materials standards, and include recommendations for reducing or eliminating the source or mechanisms of contamination. Based on this analysis, the City or its contractor will select and implement measures to control contamination, with a performance standard that groundwater quality must be returned to baseline conditions. These measures will be subject to City approval.

Mitigation Measure WQ-2: Incorporate Source Treatment Controls into Design (project falls into greater or equal to 5 acres road surface category)

To reduce or eliminate water quality effects from polluted runoff from project facilities, the City or its contractor will implement multiple BMPs in areas with potential to drain to storm drainage systems or surface waters. As a performance standard, these BMPs will be selected to achieve maximum sediment removal and represent the Best Achievable Technology (BAT) that is economically achievable.

The BMPs may include a combination of source control, structural improvements, and treatment systems. They may include but are not limited to the following.

1. Grass strips, high infiltration substrates, and grassy swales will be used where feasible to reduce runoff and provide initial stormwater treatment.
2. Small settling, treatment, or infiltration devices may be installed beneath paved areas to provide initial filtration before discharge into subsequent treatment systems or storm drainage systems.
3. Drains will discharge to natural surfaces or swales where possible to avoid excessive concentration and channelization of stormwater.
4. Permanent energy dissipaters for drainage outlets will be installed.
5. If necessary, retention or detention basins designed to provide effective water quality control will be installed. Basin features will include the following.
    a. Retention time for settling of fine particles will be maximized.
    b. Maintenance schedules will be established for periodic removal of sedimentation, excessive vegetation, and debris that may clog basin inlets and outlets.
    c. The retention basin elevation will be maximized to allow the highest amount of infiltration and settling before discharge.

These BMPs shall be incorporated into project design before finalization of design and initiation of project construction. The City or its contractor will conduct routine (at least monthly) inspections of the construction area to verify that the identified BMPs are properly implemented and maintained. The City will notify its contractor immediately if there is a noncompliance issue and will require compliance.

3.11.5 Cumulative Impacts

Although the surface waters in the project area are identified as impaired for a variety of constituents, indicating that they have no additional assimilative capacity for these constituents, none of these constituents are anticipated to be generated during construction or operation of the proposed action. In addition, the proposed action would implement mitigation measures such that other impacts on water quality are avoided or minimized.

3.12 Geology, Soils, Seismicity, and Paleontological Resources

The following description of geological site conditions is summarized from the preliminary geology and geotechnical report prepared for the proposed action (Blackburn Consulting 2001). This report is available for review at the City offices. This section addresses issues related to geology, soils, seismicity, and paleontological resources in the project area.

3.12.1 Regulatory Setting

State Regulations

The following policies and ordinances regarding geology and soils have been established to protect people and property from geologic hazards. Regulations applicable to paleontological resources are also described.

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Earthquake Fault Zoning Act (formerly called Alquist-Priolo Special Studies Zones Act) was signed into law in 1972. The primary purpose of the act is to mitigate the hazard of fault rupture by prohibiting the location of structures for human occupancy across the traces of active faults (Hart and Bryant 1997). The act requires that earthquake fault zones be delineated by the state geologist of California along faults that are sufficiently active and well-defined. These faults show evidence of Holocene surface displacement along one or more of their segments (sufficiently active), and are clearly detectable by a trained geologist as a physical feature at or just below the ground surface (well-defined). The boundary of an earthquake fault zone is generally about 152.4 m (500 ft) from major active faults, and 61 to 91.4 m (200 to 300 ft) from well-defined minor faults. The act dictates that cities and counties withhold development permits for sites within an earthquake fault zone under their jurisdiction until geologic investigations demonstrate that the sites are not threatened by surface displacements from future faulting (Hart and Bryant 1997). None of the project components would be located in or cross an earthquake fault zone as defined by the California Geological Survey (CGS) (formerly California Division of Mines and Geology [CDMG]) (Blackburn Consulting 2001). Therefore, the proposed action would not be subject to restrictions regarding fault rupture.

Public Resources Code

Several sections of the PRC are pertinent to the proposed action and project area geology. The Seismic Hazards Mapping Act of 1990 (PRC 2690) and the Seismic Hazards Mapping Regulations (14 CCR 3720 to 3725) attempt to protect the public from the strong ground shaking, liquefaction, landslides, other ground failures, and other earthquake hazards. CDMG Special Publication 117 (California Division of Mines and Geology 1997) constitutes the guidelines for evaluating seismic hazards other than surface fault rupture and for recommending mitigation measures, as required by PRC 2695(a).

National Pollutant Discharge Elimination System

As of February 2003, the U.S. Environmental Protection Agency (EPA) requires that project proponents or contractors apply for a storm water discharge permit and develop a SWPPP for ground-disturbing activities that would affect 0.4 ha (1 ac) or more. This requirement falls under the NPDES. For the purposes of the NPDES, construction activities are defined as clearing,

excavating, grading, or conducting other land-disturbing activities. The State of California has been delegated by EPA to administer EPA's General Construction Permit, which authorizes stormwater discharges to waters of the United States. A SWPPP describes proposed construction activities, receiving waters, stormwater discharge locations, and BMPS that would be used to reduce project construction effects on receiving water quality.

Local Regulations

City of Sacramento Grading, Erosion and Sediment Control Requirements

Chapter 15 of the City of Sacramento Code (City of Sacramento 2000) requires preliminary and final grading plans and an erosion and sediment control plan be submitted and approved by the Director of the City Planning and Building Department before construction of a project may begin.

Specifically, section 15.88 of the City Code is the Grading, Erosion and Sediment Control Ordinance for the City of Sacramento. The grading ordinance is enacted for the purpose of regulating grading on property within the city limits of the city to safeguard life, limb, health, property and the public welfare; to avoid pollution of watercourses with nutrients, sediments, or other materials generated or caused by surface water runoff; to comply with the city's national pollution discharge elimination system (NPDES) Permit No. CA0082597, provision D2, issued by the California regional water quality control board; and to ensure that the intended use of a graded site within the city limits is consistent with the City of Sacramento General Plan, any specific plans adopted thereto and all applicable city ordinances and regulations. The grading ordinance is intended to control all aspects of grading operations within the city limits of the city.

The grading ordinance sets forth rules and regulations to control land disturbances, landfill, soil storage, pollution, and erosion and sedimentation resulting from construction activities. The grading ordinance establishes procedures for issuance, administration and enforcement of permits for such activities. Any grading within the city limits of the city shall conform to provisions of the grading ordinance and other applicable provisions of the city code, including but not limited to, the latest edition of the city standard specifications for public works construction, Sacramento city/county drainage manual, and city manual of standards and improvement standards.

Sacramento County General Plan

The Sacramento County General Plan (Sacramento County 1993) contains goals, objectives, and policies that guide growth and development in areas under County jurisdiction. Relevant goals and policies are listed below.

> **Element Goal:** Minimize the loss of life, injury, and property damage due to seismic and geological hazards.
>
> **Element Policy SA-1.** The County shall require geotechnical reports and impose the appropriate mitigation measures for new development located in seismic and geologically sensitive areas.
>
> **Element Policy SA-3**. The County shall support efforts by Federal, State, and other local jurisdictions to investigate local seismic and geological hazards and support those programs that effectively mitigate these hazards.

Sacramento County Land Grading and Erosion Control Ordinance

Proponents of construction projects involving disturbance of 0.4 ha (1 ac) or more or movement of more than 350 yards^3 or more of soil must comply with the provisions of the County Land Grading and Erosion Control Ordinance (County of Sacramento 1995). Among the provisions of ordinance are the requirements that plans be prepared by civil engineer showing proposed grades, soil compaction, and other geotechnical specifications; and that a Grading and Erosion Control Permit be obtained from the county.

Regulations Pertinent to Paleontological Resources

A number of laws and regulations are relevant to the protection of sensitive paleontological resources in the context of Caltrans projects, as summarized below.

- PRC 5097.5 defines any authorized disturbance or removal of fossil sites or remains on public land as a misdemeanor.
- NEPA Section 101(b)(4) directs federal agencies to use all practicable means to "Preserve important historic, cultural, and natural aspects of our natural heritage."
- CEQA Appendix G identifies destruction of a "unique" paleontological resource or site as a significant impact.
- The Federal Antiquities Act of 1906 (16 USC 431 to 433, amended by statute 23 USC 305), authorizes funds to salvage of paleontological resources from federal-aid highway projects.

Caltrans' policy for management of paleontological resources consists of three steps: (1) identification of the resource, (2) assessment of actions to mitigate impacts, and (3) implementing the mitigation measures (California Department of Transportation 2002). This policy provides definitions of paleontological significance and sensitivity.

3.12.2 Affected Environment

Elevations range from a high of about 5 m (16 ft) asl near the eastern and western ends of the project site to a low of about 1 m (3.3 ft) asl near the center of the project site.

Regional Geology

The project site is located in the Great Valley, a long, narrow, north-south trending trough that lies between the Sierra Nevada on the east and Coast Ranges on the west. The Great Valley is theorized to have once been connected to the Pacific Ocean and filled with seawater. Geologists speculate that the Great Valley became an isolated arm of the sea during the Cretaceous Period (approximately 140 million years ago). Sediments derived from the mountains on the east and west have filled the Great Valley to a depth exceeding 3,050 m (10,000 ft) (Blackburn Consulting 2001).

Local Geology

The following geologic conditions were determined by Blackburn Consulting, Inc. (BCI) (2001) based on a review of published geologic maps. BCI found that Quaternary Alluvium (Qa in Figure 2 of Blackburn Consulting 2001) immediately underlies the extreme western portion of the project site. The remainder is underlain by Quaternary Basin deposits (Qb) and Lower Member of the Riverbank Formation (Qrl).

Quaternary Alluvium is generally composed of loose to medium dense, unweathered gravel, sand, silt, and clay deposited by present-day stream and river systems that drain the Coast Ranges, Klamath Mountains, and Sierra Nevada. These deposits form natural levees along the main channel of the Sacramento River. Geologists estimate that these sediments were deposited 200 to 10,000 years ago during the Holocene period and vary in thickness from a few centimeters (1 to 2 in) to 10 m (30 ft) (Blackburn Consulting 2001).

Quaternary Basin deposits generally consist of soft to stiff silt and clay. Similar to Quaternary Alluvium, geologists estimate that the basin deposits were laid down 200 to 10,000 years ago by streams and rivers that drain the surrounding mountain ranges. The basin deposits are estimated to range in thickness from 1 to 60 m (3 to 197 ft) (Blackburn Consulting 2001).

Lower Member Quaternary Riverbank Formation sediments are generally composed of semi-consolidated gravel, sand, and silt deposited 130,000 to 450,000 years ago. The sediments near Sacramento were likely derived from the western slope of the Sierra Nevada and deposited by the American River. The sediments form alluvial fans and terraces, which were later dissected by rivers and streams. Based on previous experience, BCI believes that the Riverbank Formation is at least 30.5 m (100 ft) thick and likely underlies the younger alluvium and basin deposits (Blackburn Consulting 2001).

Exploratory borings for the existing Stonecrest Avenue Bridge (located in Quaternary Alluvium and the Riverbank Formation near the western end of the project area) indicate that the bridge is underlain by interbedded layers of stiff to hard silt, clay, and sandy silt, and medium dense sand and silty sand to the 23.5-m (77-ft) depth explored (Blackburn Consulting 2001).

Exploratory borings for the Franklin Boulevard/Union House Creek Bridge (located in the Riverbank Formation near the eastern end of the project area) indicate the bridge is underlain by interbedded layers of hard to very hard silt and sandy silt to the 16-m (52-ft) depth explored (Blackburn Consulting 2001).

Soils

The USDA Soil Conservation Service (now called the Natural Resources Conservation Service [NRCS]) (Tugel 1993) has prepared detailed mapping of the soils in the project area. In general, the soils are on nearly level slopes, fine-textured or moderately fine-textured, very deep, and slowly to very slowly permeable. All the soils formed in mixed alluvium. Although they generally formed under poorly drained conditions or were subject to frequent flooding, their natural drainage characteristics have been improved as a result of flood control projects, drainage ditch excavation, and groundwater pumping.

Table 3.12-1 provides as summary of the soil characteristics that are most relevant to project construction and potential impacts.

Table 3.12-1. Summary of Salient Soil Characteristics in the Project Area

Soil Unit Name (map symbol)	Generalized Profile Characteristics	Water Erosion Hazard	Shrink-Swell (Expansion-Contraction) Potential	Corrosivity to Uncoated Steel	Corrosivity to Concrete
Clear Lake clay, partially drained, 0-2% slopes, frequently flooded (114)	0–43": clay 43–61": sandy clay loam to clay loam	Slight	Moderate to high	High	Moderate
Clear Lake clay, hardpan substratum, drained, 0-1% slopes (115)	0–34": clay 34–48": clay loam 48–64": hardpan	Slight to none	Moderate to high	High	Low
Dierssen clay loam, deep, drained, 0-2% slopes (135)	0–15": clay loam 15–26": clay 26–60+": strongly cemented hardpan	Slight to none	Moderate to high	High	Low
Egbert clay, partially drained, 0-2% slopes (141)	0–18": clay 18–46": clay loam 46–60+": clay loam and sandy clay loam	Slight to none	Moderate to high	High	Moderate
Galt clay, 0-2% slopes (152)	0–32": clay 32+": weakly cemented hardpan	Slight	High	High	Low
Galt clay, 2-5% slopes (153)	0–32": clay 32+": weakly cemented hardpan	Slight	High	High	Low
Scribner clay loam, partially drained, 0-2% slopes (222)	0–39": clay loam 39–60+": clay loam and sandy clay loam	Slight to none	Moderate	High	Low

Source: Tugel 1993.

Site Seismicity

Seismic hazards refer to earthquake fault ground rupture, ground shaking, liquefaction and related hazards, and earthquake-induced slope failure.

Fault Rupture Hazard

According to BCI (2001), no known faults cross the site. The CDMG Fault Activity Map and Caltrans 1996 California Seismic Hazard Map indicate that the closest late Quaternary or younger faults (less than 700,000 years old) are the following (Blackburn Consulting 2001).

- Coast Ranges-Sierran Block Boundary Seismic Zone, located approximately 38 km (23 mi) west of the project area.
- Vaca-Kirby Hill-Montezuma Hills Fault, located approximately 40 km (25 mi) southwest of the project area.
- Prairie Creek-Spenceville-Deadman Fault, located approximately 43 km (27 mi) northeast of the project area.
- Dunnigan Hills Fault, located approximately 43 km (27 mi) northwest of the project area.

The controlling fault for project design purposes would most likely be the Coast Ranges-Sierran Block Boundary Seismic Zone. Because the fault traces are not well defined at the surface, this fault zone is considered a Special Seismic Source according to the Caltrans 1996 California

Seismic Hazard Map. The zone includes the sources for the 1892 Vacaville-Winters and 1983 Coalinga earthquakes (Blackburn Consulting 2001).

Ground Shaking

A number of earthquake faults in the region are capable of causing ground shaking at the project area. Among these is the Coast Ranges-Sierran Block Boundary Seismic Zone, which has an estimated maximum magnitude (Mw) of Richter scale 7.0. The estimated resulting peak horizontal bedrock acceleration at the project area is approximately 0.2 g (where 1.0 g is equal to the force of gravity), based on the Caltrans 1996 California Seismic Hazard Map (Blackburn Consulting 2001).

Liquefaction and Lateral Spreading

Liquefaction is a type of sudden and temporary ground failure caused by ground shaking in unconsolidated soils and sediments that are saturated by groundwater. Sites that are most subject to liquefaction are those that are underlain by clean, loose sands and silts where groundwater is within 15.2 m (50 ft) of the surface and where there is a significant seismic hazard. Secondary effects of liquefaction, such as lateral spreading (i.e., lateral movement of liquefied ground toward an open face such as an incised stream channel), may also occur.

Based on previous experience in the area, BCI determined that liquefaction is typically not a significant issue because of the relatively low anticipated seismic ground accelerations and thin sand deposits. However, because of relatively high groundwater levels and possibility of relatively loose sand layers in the upper 15.2 m (50 ft), liquefaction could pose a hazard (Blackburn Consulting 2001).

Paleontological Resources

No directed survey for paleontological resources has been conducted for the proposed action and it is not known whether such resources are present in the project area. Based on the geologic units described above, there appears to be a relatively small possibility of paleontological resources (e.g., fossils) to be present in the Quaternary Alluvium and Quaternary Basin units within the project area and a somewhat better potential for fossils to be found in the Riverbank Formation sediments. In 1959, a Pleistocene "bone bed" was found by a farmer in the Riverbank Formation sediments in the Elk Grove area. Fossils recovered to date from the Riverbank Formation typically have been from large, late Pleistocene vertebrate species, although fish, frogs, snakes, turtles, and plants also have been found. The large vertebrate fossils include bison, horse, camel, mammoth, ground sloth, and wolf fossils (City of Elk Grove 2003). Similar large vertebrate and plant fossils have been found in Riverbank Formation sediments at the Arco Arena site, north of Sacramento (Hilton et al. 2000). However, no evidence of such resources was uncovered during the extensive remote sensing (electromagnetic) surveys of the project area (see section 3.9, "Cultural Resources").

3.12.3 Impacts

Approach and Methodology

The effects of the proposed action on geology, soils, seismicity, and paleontological resources were based on a review of relevant publications, reconnaissance-level survey, and findings of the preliminary geology and geotechnical report prepared by BCI (2001).

Build Alternative A: Franklin to Freeport North Alignment

Impact GEO-1: Potential Structural Damage and Injury from Fault Rupture

The project area is not located in an Alquist-Priolo Special Studies Zone. According to the preliminary geology and geotechnical report by BCI (2001), no known faults cross the project area; the closest known fault the Coast Ranges-Sierran Block Boundary Seismic Zone, 37.0 km (23 mi) west of the site.

Impact GEO-2: Potential Structural Damage and Injury from Ground Shaking

An earthquake generated along regional faults could cause ground shaking in the project area. Based on the anticipated ground acceleration at the site (approximately 0.2 g), the level of this hazard is anticipated to be relatively low. However, structures not designed and constructed according to seismic safety standards are more susceptible to damage (and subsequently to increased risk of injury to persons) than structures built in accordance with Caltrans standards. All project structures would conform to the latest Caltrans standards, which establish requirements for seismic safety of all structures.

Impact GEO-3: Potential Structural Damage and Injury from Liquefaction and Related Hazards

Because of the relatively high groundwater levels and possibility of relatively loose sand layers in the upper 15.2 m (50 ft), there is a possibility that liquefaction and related hazards could occur at the project area. However, the City has committed to implement measures to address liquefaction hazards (see Section 3.22.2, "Geology Environmental Commitments").

Impact GEO-4: Potential Accelerated Erosion from Grading Activities

Implementation of the proposed action would result in construction activities involving grading and removal of vegetative cover, which could cause increased wind and water erosion rates. In addition, construction activities may compact the soil, increasing runoff and decreasing the revegetation potential. Grading of the soil to form the steep slopes of the bridge approaches would increase their erosion hazard. Implementation of a SWPPP along with conformance with the City's erosion and sediment control ordinance (Ordinance 93-068, Section 15.88 of the City Code) and the measures already committed to by the City (see Section 3.22.2, "Geology Environmental Commitments") would ensure that no impact would occur.

Impact GEO-5: Settlement of Bridge Approach Fill Material

BCI anticipates the thickness of the fill material for the bridge approaches would range from approximately 6.1 to 12.2 m (20 to 40 ft) in height. Because the underlying soils consists of stiff to hard silt and clay and medium dense silty sand, it is likely that most of the settlement would occur during construction and that waiting periods (if any) would be less than about 30 days. Without testing, however, it is not possible to determine the necessary waiting period for settlement. However, the City has committed to implement measures to prevent excessive fill settlement (see Section 3.22.2, "Geology Environmental Commitments").

Impact GEO-6: Potential Scour at Bridge Supports

The soil surrounding bridge supports located in the area between Morrison Creek and the UPRR tracks may be subject to potential scour from streamflow, thereby jeopardizing the integrity of the bridge. However, the City has committed to implement measures to prevent scour (see Section 3.22.2, "Geology Environmental Commitments").

Impact GEO-7: Corrosion of Concrete and Steel Structural Components

As shown in Table 3.12-1, soils in the area have a moderate to high potential to corrode concrete and uncoated steel structural components, such as culverts and foundations, unless measures are implemented to avoid such a hazard. However, the City has committed to implement measures to address soil corrosivity (see Section 3.22.2, "Geology Environmental Commitments").

Impact GEO-8: Damage to Structural Components from Expansive Soils

As shown in Table 3.12-1, soils in the area have a moderate to high expansion-contraction potential. Seasonal changes in soil moisture content could cause the soils to expand to the point that structures crack or fail, unless measures were implemented to avoid such a hazard. Caltrans standards will require that the project components are designed and constructed so as to withstand the effects of expansive soils. The City has committed to implement such measures as lime treatment of the soils to reduce the degree of expansion and contraction (see Section 3.22.2, "Geology Environmental Commitments").

Build Alternative B: Franklin to Freeport South Alignment

The impacts under this alternative would be the same as those described for Build Alternative A.

No Build Alternative (No Project)

This alternative would not locate structures in potentially hazardous locations because no structures would be built. Accelerated erosion, scour, soil corrosion, and approach fill settlement would not be a concern under this alternative because the environment would not be altered.

3.12.4 Avoidance, Minimization and Mitigation Measures

No mitigation has been identified.

3.12.5 Cumulative Impacts

Construction in the project area could lead to an increased sediment load to receiving waters, including the Sacramento River. However, soil erosion hazards are generally slight within the project corridor and in the surrounding area (Tugel 1993) where other proposed actions might be constructed in the future. This low erosion hazard, and conformance with the City's erosion and sediment control ordinance would reduce the potential for cumulative sedimentation impacts.

3.13 Hazards and Hazardous Materials

The following description of hazards and hazardous materials site conditions is summarized from the Initial Site Assessment (ISA) prepared by Blackburn Consulting (2001b). This report is available for review at the City offices. This section addresses issues related to hazardous and hazardous materials in the project area.

3.13.1 Regulatory Setting

A hazardous material is defined by the California Department of Toxic Substances Control (DTSC) as a material that poses a significant present or potential hazard to human health and safety or the environment if released because of its quantity, concentration, or physical or chemical characteristics (26 CCR 25501). Hazardous materials that would be used during construction activities for this project include diesel fuel and other construction equipment liquids. Applicable hazardous-material regulations and policies are summarized below.

Federal Requirements

EPA is the principal federal regulatory agency responsible for the safe use and handling of hazardous materials. Two key federal regulations pertaining to hazardous wastes are described below. Other applicable federal regulations are contained primarily in 29, 40, and 49 CFR.

Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA) enables EPA to administer a regulatory program that extends from the manufacture of hazardous materials to their disposal, thereby regulating the generation, transport, treatment, storage, and disposal of hazardous waste at all facilities and sites in the nation.

Comprehensive Environmental Response, Compensation, and Liability Act, and Superfund Amendment and Reauthorization Act Title III

The Comprehensive Environmental Response, Compensation, and Liability Act, also known as Superfund, was passed to facilitate the cleanup of the nation's toxic waste sites. In 1986, Superfund was amended by the Superfund Amendment and Reauthorization Act Title III (community right-to-know laws), also called the Emergency Planning and Community Right-to-Know Act, which states that past and present owners of land contaminated with hazardous substances can be held liable for the entire cost of the cleanup even if the material was dumped illegally when the property was under different ownership. These regulations also establish reporting requirements that provide the public with important information on hazardous chemicals in their communities to enhance community awareness of chemical hazards and facilitate development of state and local emergency response plans.

State Regulations

California regulations are equal to or more stringent than federal regulations. EPA has granted the state primary oversight responsibility to administer and enforce hazardous waste management programs. State regulations require planning and management to ensure that hazardous wastes are handled, stored, and disposed of properly to reduce risks to human health and the environment. Several key state laws pertaining to hazardous wastes are discussed below.

Hazardous Materials Release Response Plans and Inventory Act of 1985

The Hazardous Materials Release Response Plans and Inventory Act, also known as the Business Plan Act, requires businesses using hazardous materials to prepare a hazardous materials business plan that describes their facilities, inventories, emergency response plans, and training programs. Hazardous materials are defined as raw or unused materials that are part of a process or manufacturing step. They are not considered hazardous waste. Health concerns pertaining to the release of hazardous materials, however, are similar to those relating to hazardous waste.

Hazardous Waste Control Act

The Hazardous Waste Control Act created the state hazardous waste management program, which is similar to, but more stringent than, the federal RCRA program. The act is implemented by regulations contained in 26 CCR, which describes the following required aspects for the proper management of hazardous waste: identification and classification; generation and transport; design and permitting of recycling, treatment, storage, and disposal facilities; treatment standards; operation of facilities and staff training; and closure of facilities and liability requirements.

These regulations list more than 800 materials that may be hazardous and establish criteria for identifying, packaging, and disposing of them. Under this act and 26 CCR, a generator of hazardous waste must complete a manifest that accompanies the waste from the generator to the transporter to the ultimate disposal location. Copies of the manifest must be filed with DTSC.

Emergency Services Act

Under the Emergency Services Act, the state developed an emergency response plan to coordinate emergency services provided by federal, state, and local agencies. Rapid response to incidents involving hazardous materials or hazardous waste is an important part of the plan, which is administered by the California Office of Emergency Services. The office coordinates the responses of other agencies, including EPA, California Highway Patrol, RWQCBs, air quality management districts, and county disaster response offices.

California Occupational Safety and Health Administration Standards

Worker exposure to contaminated soils, vapors that could be inhaled, or groundwater containing hazardous constituents would be subject to monitoring and personal safety equipment requirements established in Title 8 of the California Occupational Safety and Health Administration (Cal-OSHA) regulations. The primary intent of the Title 8 requirements is to protect workers, but compliance with some of these regulations would also reduce potential hazards to nonconstruction workers and project area occupants because required controls related to site monitoring, reporting, and other activities would be in place.

Workers who are in direct contact with soil or groundwater containing hazardous levels of constituents would perform all activities in accordance with a hazardous operations site-specific health and safety plan (HASP), as outlined in Cal-OSHA standards. An HASP is not required for workers such as heavy equipment operators, carpenters, painters, or other construction workers who would not be performing investigation or remediation activities where direct contact with materials containing hazardous levels of constituents could occur. However, elements of an HASP protect those workers who may be adjacent to cleanup activities by establishing

engineering controls, monitoring, and security measures to prevent unauthorized entry to cleanup sites and to reduce hazards outside the investigation/cleanup area.

In addition to an HASP, Cal-OSHA requires that contaminated sites listed in the National Priority List or by the State of California must also have a risk management plan reviewed and approved by the respective RWQCB or DTSC and administered by the responsible party. The risk management plan identifies specific measures to reduce potential risks to human and ecological populations during construction of the proposed action for each site or group of sites to be developed. The RWQCB follows EPA guidelines for risk management. EPA and DTSC guidelines divide potential human health risks associated with exposure to chemicals into cancer risks and noncancer hazard indices (HIs). The calculated cancer risk characterizes health risks as a result of exposure to carcinogenic substances by using estimated or measured concentrations and risk/potency factors. The calculated cancer risk is an approximation of the probability of an individual developing cancer over the course of a lifetime as a result of exposure to a particular cumulative dose of a potential carcinogen.

Unlike cancer risk estimates, the measure used to describe the potential for noncarcinogenic toxic effects to occur is expressed in terms of an HI, which is calculated as the ratio of the predicted acute or chronic exposure (dose) of a noncarcinogenic substance to that chemical's toxicity threshold, often referred to as the reference dose. Because there are inherent uncertainties and assumptions used in the modeling, the final calculated risk value should be viewed as a very conservatively estimated probability of occurrence. The HIs for the project site would be determined before construction by the lead agency in the site's cleanup process.

Other Laws, Regulations, and Programs

Various other state regulations have been enacted that affect hazardous waste management, including the following.

- Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65), which requires labeling of substances known or suspected by the state to cause cancer.
- California Government Code Section 65962.5, which requires the Office of Permit Assistance to compile a list of possible contaminated sites in the state.

State and federal regulations also require that hazardous materials sites be identified and listed in public records. These lists include sites that have been identified through the following regulatory processes.

- Comprehensive Environmental Response, Compensation, and Liability Information System
- National Priorities List for Uncontrolled Hazardous Waste Sites
- Resource Conservation and Recovery Act
- California Superfund List of Active Annual Workplan Sites
- Lists of state-registered underground and leaking underground storage tanks

Local Regulations

Sacramento County General Plan

The Sacramento County General Plan (Sacramento County 1993) contains goals, objectives, and policies that guide growth and development in areas under County jurisdiction. The project area includes some unincorporated county land in Freeport and the SRCSD Bufferlands. Relevant policies contained in the plan are listed below.

> **Policy HM-4** The handling, storage, and transport of hazardous materials shall be conducted in a manner so as not to compromise public health and safety standards.
>
> **Policy HM-7** Encourage the implementation of workplace safety programs and to the best extent possible ensure that residents who live adjacent to industrial or commercials facilities are protected from accidents and the mishandling of hazardous materials.
>
> **Policy HM-8** Continue the effort to prevent ground water and soil contamination.
>
> **Policy HM–9** Continue the effort to prevent surface water contamination.
>
> **Policy HM-10** Reduce the occurrences of hazardous material accidents and the subsequent need for incident response by developing and implementing effective prevention strategies.
>
> **Policy HM-11** Protect residents and sensitive facilities from incidents which may occur during the transport of hazardous materials in the County.
>
> **Policy SA-23.** The County shall require, unless it is deemed infeasible to do so, the use of mechanical vegetation control in lieu of burning or the use of chemicals in areas where hazards from natural cover must be eliminated, such as levees and vacant lots.

3.13.2 Affected Environment

BCI (2001) prepared an ISA report for the project area for which the following tasks were conducted.

- A database search of county, state, and federal environmental records to identify standard agency listings of sources of hazardous materials/waste that might impact the proposed action.
- A historical aerial photograph review of the project area to identify past land uses that may indicate potential sources of hazardous materials.
- A reconnaissance of the project area to identify present land use and visual evidence of possible sources of hazardous materials.

The ISA did not identify hazardous materials conditions, other than the potential for presence of aerially deposited lead (ADL) and possible transformer relocation/removal.

Transformers

Transformers were not observed on or immediately adjacent to the project alignments. Pole-mounted transformers were observed at one location along the northern alignment (Build

Alternative A) approximately 1.2 km (0.75 mi) east of I-5. The poles would likely need to be removed or relocated during construction activities if Build Alternative A is selected. Old transformers have the potential to contain hazardous materials, specifically polychlorinated biphenyls (PCBs), in the oil. Most transformers with PCBs were changed out in the 1980s; however, it is possible that isolated units were missed.

Drinking Water

Given the planned development (interchange construction), it is unlikely that use of drinking water from either wells or municipal supplies will be part of site development. Construction of bridge foundations at Stonecrest Avenue and Morrison Creek may encounter groundwater. Hazardous materials are not expected to affect groundwater at these locations.

Pesticides

Although no direct evidence of pesticide use within the right-of-way was revealed in the ISA, the vicinity is recognized as an agricultural area; consequently, historic pesticide use would not be unexpected. However, given the planned site use (paved roadway), further investigation into past pesticide use and potential impacts does not appear warranted.

Bridge Demolition and Construction

The proposed action includes demolition of the existing Stonecrest Avenue overpass. This is a concrete structure; therefore, lead paint abatement is not expected to be necessary. Based on a field review by Caltrans staff on January 11, 2005, and a review of the as-built drawings, there is no potential for asbestos-containing materials in the structure. However, a National Emissions Standard for Hazardous Air Pollutants (NESHAP) notification to the local air district is required when structure demolition is part of the project. The project could require import of soil (borrow material) to construct the interchange and Morrison Creek bridge.

Aerially Deposited Lead

ADL is known to exist along the California state highway system. The source of the lead was from vehicle emissions when leaded fuels were used.

Yellow Traffic Stripes

Yellow traffic stripes are present along Stonecrest Avenue. Yellow thermoplastic stripes may contain heavy metals such as lead and chromium at concentrations in excess of the hazardous waste thresholds established by the CCR and may produce toxic fumes when heated.

Railroad Property

The project alignments cross active railroad tracks. Railroad right-of-way often contains utility easements that can result in undiscovered, localized contamination. Spills or releases of hazardous materials along the railroad near the project alignments have not been reported. Kinder-Morgan (formerly Santa Fe Pacific Pipelines) was contacted by BCI and informed BCI that it has no pipelines along this portion of the railroad. Hazardous materials spills or releases have not be identified along the railroad near the project site, and the railroad embankment is not expected to be disturbed by construction of the roadway or overhead.

3.13.3 Impacts

Approach and Methodology

The assessment of adverse effects related to hazardous materials was based on the findings of the ISA prepared by BCI (2001).

Build Alternative A: Franklin to Freeport North Alignment

Impact HAZ-1: Potential for Exposure of Previously Unknown Hazardous Wastes to Construction Workers and/or Nearby Land Uses

The Initial Site Assessment (ISA) conducted by BCI indicates that the project area and surrounding properties generally have a low risk of presenting substantial impacts from hazardous materials or wastes, or petroleum hydrocarbons. Previously unreported hazardous materials could be discovered during project construction. However, the City has committed to implement measures to address accidental exposure (see Section 3.22.5, "Hazards and Hazardous Materials Environmental Commitments"). Mitigation has been identified for this direct effect (HAZ-1 to HAZ-4 and AQ-2 [see section 3.14, "Air Quality"]).

Impact HAZ-2: Potential for Exposure of Known Hazardous Materials to Humans or the Environment

The ISA indicates that the project area generally has a low risk of presenting substantial impacts from hazardous materials. However, it indicates the potential for hazardous materials in the form of Aerially Deposited Lead (ADL), Polychlorinated biphenyls (PCBs) in transformers, and heavy metals such as chromium and lead in yellow street striping. Construction may require the movement or disposal of materials containing some or all of these hazardous materials. However the City has committed to implementing measures to address accidental exposure (see Section 3.22.5, "Hazards and Hazardous Materials Environmental Commitments"). Mitigation has been identified for this direct effect (HAZ-1 to HAZ-4 and AQ-2 [see section 3.14, "Air Quality"]).

Impact HAZ-3: Potential for Exposure of Humans and the Environment to Hazardous Conditions due to the Accidental Release of Hazardous Materials

Construction of the proposed action would involve the use of heavy equipment, small quantities of hazardous materials (e.g., petroleum and other chemicals used to operate and maintain construction equipment), and larger quantities of potentially hazardous road construction materials (i.e., black-topping materials) that may result in hazardous conditions on site. However, the City has committed to implement measures to address exposure from accidental releases (see Section 3.22.5, "Hazards and Hazardous Materials Environmental Commitments").

Impact HAZ-4: Potential Exposure of Construction Workers to Hazardous Concentrations of Asbestos-Containing Materials in the Stonecrest Avenue Overpass

Demolition of the existing Stonecrest Avenue overpass is required to construct the new interchange. Based on existing information, the structure does not have asbestos-containing materials. NESHAP notification applies any time demolition is proposed. Mitigation has been identified for this direct effect (HAZ-5).

Impact HAZ-5: Potential Use of Contaminated Import/Borrow Material to Construct the Overcrossing

Construction of the new interchange and the structure over Morrison Creek may require the import of soil (borrow material) to construct the embankments. Although unlikely, it is possible

that any imported soil could be contaminated with hazardous wastes, depending on the source of the material. Mitigation has been identified for this direct effect (HAZ-6).

Build Alternative B: Franklin to Freeport South Alignment

The impacts under this alternative would be the same as those described for Build Alternative A.

No Build Alternative (No Project)

This alternative would not involve the use or potential unearthing of any hazardous materials because no construction or excavation would occur. There would be no potential for exposure of humans or the environment to hazardous materials in excess of whatever potential already exists.

3.13.4 Avoidance, Minimization and Mitigation Measures

Mitigation Measure HAZ-1: Sampling, Testing, Removal, Storage, Transportation, and Disposal of Yellow Striping along Existing Roadway

Yellow striping along Stonecrest Avenue will require removal for both build alternatives. If burial of pre-existing pavement by new paving is conducted, impacts would be considered beneficial: the burial process would nearly eliminate leaching of the lead incurred from precipitation. However, if striping paint is to be removed or impacted in any manner, sampling and testing of the yellow striping scheduled for removal should be performed to determine the presence of lead and chromium. All aspects of the proposed action associated with removal, storage, transportation, and disposal will be in strict accordance with appropriate regulations from the CCR. Disposal of the stripes will be at a Class 1 disposal facility.

Mitigation Measure HAZ-2: Develop a Health and Safety Plan (HASP) to Address Worker Health and Safety

The amounts and levels of possible contamination relating to ADL and PCBs will be determined during the design phase. An ADL site investigation is required. As necessary, an HASP will be prepared to address worker safety when working with potentially hazardous materials, including, but not limited to, potentially lead-bearing paint, transformer fluids, soils potentially containing ADL, and other construction-related materials within Caltrans right-of-way for any soil disturbance.

Mitigation Measure HAZ-3: Sampling and Analysis of Transformer Fluid from Electrical Transformers

If leaks from electrical transformers that will either remain within the project construction zone, or will require removal or relocation are encountered before or during construction, the transformer fluid should be sampled and analyzed by qualified personnel for detectable levels of PCBs. A PCB site investigation is required within Caltrans right-of-way for any soil disturbance. The owner of the transformers will verify the contents of the transformer before relocation and take proper mitigation actions if required. If PCBs are detected, the transformer will be removed and disposed of in accordance with regulatory agency requirements. Any stained soil encountered below electrical transformers with detectable PCB levels will also be handled and disposed of in accordance with regulatory agency requirements.

Mitigation Measure HAZ-4: Testing for Aerially Deposited Lead (ADL) in Surface/Near-Surface Soils

A preliminary investigation and screening for ADL for portions of the project location immediately adjacent to I-5 to determine the levels of lead in the surface and near-surface soils will be performed during the design phase. If ADL is encountered above the regulatory thresholds, these soils would be handled or disposed of in accordance with regulatory agency requirements.

Mitigation Measure HAZ-5: Comply with Caltrans Requirements to Demolish Bridge Structures

The contract specifications will include Caltrans bridge demolition specifications that deal with disposal, handling, and health and safety issues related to structure demolition and hazardous waste. The specifications will require the Contractor to prepare a bridge demolition notification form and attachments to be submitted to the California Air Resources Board and Sacramento Metropolitan Air Quality Management District a minimum of 30 days prior to demolition. A special provision that deals with disposal, handling, and health and safety would be required.

Mitigation Measure HAZ-6: Sampling and Analysis of Any Import/Borrow Material

Any material that may be imported for construction of the embankments for the interchange on I-5 or the Morrison Creek overcrossing will require approval for use and certification to be clear of actionable levels of hazardous waste. Testing may be required depending on the source location of the material.

3.13.5 Cumulative Impacts

The mitigation measures included in this section would reduce the risk of hazards associated with the proposed action. With these mitigation measures in place, no contribution to cumulative impacts would occur.

3.14 Air Quality

The following information is summarized from the Air Quality Technical Report prepared for the proposed action (Jones & Stokes 2003a). This report is available for review at the City offices. This section addresses project effects on air quality in the project area.

3.14.1 Regulatory Setting

Existing air quality conditions in the project area can be characterized in reference to the ambient air quality standards (Table 3.14-1) that the State of California and the federal government have established for several different pollutants. For some pollutants, separate standards have been set for different measurement periods. Most standards have been set to protect public health, but some standards are based on other values (e.g., protection of crops, protection of materials, or avoidance of nuisance conditions).

Federal Requirements

The federal Clean Air Act (CAA), enacted in 1970 and amended twice thereafter (including the 1990 amendments), establishes the framework for modern air pollution control. The CAA directs EPA to establish ambient air standards for six pollutants: ozone, carbon monoxide (CO), lead, nitrogen dioxide, particulate matter, and sulfur dioxide. The standards are divided into primary and secondary standards; the former are set to protect human health within an adequate margin of safety and the latter to protect environmental values, such as plant and animal life.

The CAA requires states to submit a state implementation plan (SIP) for areas in nonattainment for federal air quality standards. The SIP, which is reviewed and approved by EPA, must demonstrate how the federal standards will be achieved. Failing to submit a plan or secure approval could lead to denial of federal funding and permits. In cases where the SIP is submitted by the state but fails to demonstrate achievement of the standards, EPA is directed to prepare a federal implementation plan.

State Regulations

Responsibility for achieving California's air quality standards, which are more stringent than federal standards, is placed on the California Air Resources Board (ARB) and local air pollution control districts. State standards are to be achieved through district-level air quality management plans that are incorporated into the SIP.

The California Clean Air Act requires local and regional air pollution control districts that are not attaining one or more of the state ambient air quality standards for ozone, CO, sulfur dioxide, or nitrogen dioxide to expeditiously adopt plans specifically designed to attain these standards. Each plan must be designed to achieve an annual 5% reduction in districtwide emissions of each nonattainment pollutant or its precursors.

Recently enacted amendments to the California Clean Air Act impose additional requirements designed to ensure an improvement in air quality within the next 5 years. More specifically, local districts with moderate air pollution that did not achieve "transitional nonattainment" status by December 31, 1997, must implement the more stringent measures applicable to districts with serious air pollution.

Local Regulations

The air quality management agencies of direct importance to Sacramento County include EPA, ARB, and the Sacramento Metropolitan Air Quality Management District (SMAQMD). EPA has established federal ambient air quality standards for which ARB and SMAQMD have primary implementation responsibility. ARB and SMAQMD are also responsible for ensuring that state ambient air quality standards are met. The Sacramento Area Council of Governments (SACOG) develops the Regional Transportation Plan (RTP) in consultation with the SMAQMD. The RTP includes projects that strive to meet the goals and objectives of the federal ambient air quality standards. The RTP is also in accord with EPA's Transportation Conformity Rule as it pertains to air quality standards in Sacramento County.

3.14.2 Affected Environment

Regional Climate and Meteorology

Ambient air quality is affected by climatological conditions, topography, and types and amounts of pollutants emitted. The following discussion describes relevant characteristics of the air basin and offers an overview of conditions affecting pollutant ambient air concentrations in the basin. The pollutants of greatest concern in the project area are CO, ozone, and particulate matter 10 microns or less in diameter (PM10) and 2.5 microns or less in diameter (PM2.5).

The proposed action is located in Sacramento, which is within the Sacramento Valley Air Basin (SVAB). The SVAB includes Sacramento, Sutter, and Yolo Counties and parts of Solano, Placer, and El Dorado Counties. The SVAB is bounded on the west by the Coast Ranges and on the north and east by the Cascade Range and Sierra Nevada. To the south is the San Joaquin Valley Air Basin.

The SVAB has a Mediterranean climate characterized by hot, dry summers and cool, rainy winters. During 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 20 to 115°F, with summer high temperatures often exceeding 90°F and winter low temperatures occasionally dropping below freezing.

In general, the prevailing wind in the Sacramento Valley is from the southwest because of marine breezes flowing through the Carquinez Strait. The Carquinez Strait is the major corridor for air moving into the Sacramento Valley from the west. Incoming airflow strength varies daily with a pronounced diurnal cycle. Influx strength is weakest in the morning and increases in the evening hours. Associated with the influx of air through the Carquinez Strait is the Schultz Eddy. The Schultz Eddy is an eddy formed when incoming marine air is diverted by mountains on the valley's western side. The eddy contributes to the formation of a low-level southerly jet between 152.4 and 304.8 m (500 and 1,000 ft) above the surface that is capable of speeds in excess of 56.3 km per hour (kmph) (35 mi per hour [mph]). This jet is important for air quality in the Sacramento Valley because of its ability to transport air pollutants over large distances.

Table 3.14-1. Ambient Air Quality Standards Applicable in California and the Attainment Status of Sacramento County

Pollutant	Symbol	Average Time	Standard (parts per million)		Standard (micrograms per cubic meter)		Violation Criteria		Attainment Status of Sacramento County	
			California	National	California	National	California	National	California	National
Ozone	O_3	1 hour	0.09	NA	180	NA	If exceeded	If exceeded on more than 3 days in 3 years	Nonattainment	Nonattainment
		8 hours	0.07	0.08	137	157	NA	If fourth highest 8-hour concentration in a year, averaged over 3 years, is exceeded at each monitor within an area	Nonattainment	No designation
Carbon monoxide	CO	8 hours	9.0	9	10,000	10,000	If exceeded	If exceeded on more than 1 day per year	Attainment	Unclassified/ attainment
		1 hour	20	35	23,000	40,000	If exceeded	If exceeded on more than 1 day per year	Attainment	Unclassified/ attainment
(Lake Tahoe only)		8 hours	6	NA	7,000	NA	If equaled or exceeded	NA	NA	NA
Nitrogen dioxide	NO_2	Annual average	NA	0.053	NA	100	NA	If exceeded	Attainment	Unclassified/ attainment
		1 hour	0.25	NA	470	NA	If exceeded	If exceeded	Attainment	No federal standard
Sulfur dioxide	SO_2	Annual average	NA	0.03	NA	80	NA	If exceeded	Attainment	Unclassified
		24 hours	0.04	0.14	105	365	If exceeded	If exceeded on more than 1 day per year	Attainment	Unclassified
		1 hour	0.25	NA	655	NA	NA	NA	Attainment	No federal standard
Hydrogen sulfide	H_2S	1 hour	0.03	NA	42	NA	If equaled or exceeded	NA	Unclassified	No federal standard
Vinyl chloride	C_2H_3Cl	24 hours	0.010	NA	26	NA	If equaled or exceeded	NA	NA	No federal standard
Inhalable particulate matter	PM10	Annual geometric mean	NA	NA	20	NA	If exceeded	NA	Nonattainment	Nonattainment
		Annual arithmetic mean	NA	NA	NA	50	NA	If exceeded	Nonattainment	Nonattainment
		24 hours	NA	NA	50	150	If exceeded	If average 1% over 3 years is exceeded	Nonattainment	Nonattainment
	PM2.5	Annual geometric mean	NA	NA	12	NA	If exceeded	NA	No designation	No federal standard
		Annual arithmetic mean	NA	NA	NA	15	NA	If exceeded	No state standard	No designation
		24 hours	NA	NA	NA	65	NA	If average 2% over 3 years is exceeded	No state standard	No designation
Sulfate particles	SO_4	24 hours	NA	NA	25	NA	If equaled or exceeded	NA	Attainment	No federal standard
Lead particles	Pb	Calendar quarter	NA	NA	NA	1.5	NA	If exceeded no more than 1 day per year	Attainment	No designation
		30 days	NA	NA	1.5	NA	If equaled or exceeded	NA	Attainment	No federal standard

Source: California Air Resources Board, "Area Designations for State and National Ambient Air Quality Standards."
Notes: All standards are based on measurements at 25°C and 1 atmosphere pressure; national standards shown are the primary (health effects) standards; NA = not applicable.

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, resulting in high pollutant concentrations near the ground surface. Generally, the lower the inversion base height from the ground and the greater the temperature increase from base to top, the more pronounced the inhibiting effect of the inversion will be on pollutant dispersion. Consequently, the highest concentrations of photochemical pollutants occur from late spring to early fall, when photochemical reactions are greatest because of more intense sunlight and the lower altitude of daytime inversion layers. Surface inversions (those at altitudes of 0 to 152.4 m [0 to 500 ft] asl) are most frequent during winter, and subsidence inversions (those at 304.8 to 609.6 m [1,000 to 2,000 ft] asl) are most common in summer.

Criteria Pollutants and Local Air Quality

Criteria Pollutants

Ozone

Ozone is a respiratory irritant that increases susceptibility to respiratory infections. It is also an oxidant that can cause substantial damage to vegetation and other materials.

Ozone is not emitted directly into the air, but is formed by a photochemical reaction in the atmosphere. Ozone precursors, called reactive organic gases (ROG) and oxides of nitrogen (NO_X), react in the atmosphere in the presence of sunlight to form ozone. Because photochemical reaction rates depend on the intensity of ultraviolet light and air temperature, ozone is primarily a summer air pollution problem.

Ozone is a regional pollutant. Because photochemical reactions take time to occur, high ozone levels often occur downwind of the emission source. Ozone conditions in Sacramento County therefore result from a combination of locally generated emissions and transported emissions.

State and federal standards for ozone have been set for a 1-hour and 8-hour averaging period. The state 1-hour ozone standard is 0.09 parts per million (ppm), not to be exceeded. The federal 1-hour ozone standard is 0.12 ppm, not to be exceeded more than three times in any 3-year period. The federal 1-hour standards were replaced with an 8-hour standard of 0.08 ppm on June 15, 2005. The CARB recently enacted a state 8-hour ozone standard of 0.07 ppm, which will become effective in early 2006.

Inhalable Particulate Matter

Particulates can damage human health and retard plant growth. Health concerns associated with suspended particulate matter focus on those particles small enough to reach the lungs when inhaled. Particulates also reduce visibility and corrode materials.

Particulate emissions are generated by a wide variety of sources, including agricultural activities, industrial emissions, dust suspended by vehicle traffic and construction equipment, and secondary aerosols formed by reactions in the atmosphere.

The federal and state standards for particulate matter apply to PM2.5 and PM10. The state PM10 standards are 50 micrograms per cubic meter (μ/m^3) as a 24-hour average and 20 μ/m^3 as an annual geometric mean. The federal PM10 standards are 150 μ/m^3 as a 24-hour average and 50

μ/m^3 as an annual arithmetic mean. The federal PM2.5 standards are 15 μ/m^3 for the annual average and 65 μ/m^3 for the 24-hour average. On June 20, 2002, ARB adopted a new annual PM2.5 standard of 12 $\mu g/m^3$.

Carbon Monoxide

CO is a public health concern because it combines readily with hemoglobin and reduces the amount of oxygen transported in the bloodstream. CO can cause health problems such as fatigue, headache, confusion, dizziness, and even death.

Motor vehicles are the dominant source of CO emissions in most areas. High CO levels develop primarily during winter when periods of light winds combine with the formation of ground-level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures.

State and federal CO standards have been set for 1-hour and 8-hour averaging times. The state 1-hour standard is 20 ppm by volume, whereas the federal 1-hour standard is 35 ppm. Both state and federal standards for the 8-hour averaging period are 9 ppm.

Toxic Air Contaminants

Although ambient air quality standards exist for criteria pollutants, no ambient standards exist for toxic air contaminants (TACs). Many pollutants are identified as TACs because of their potential to increase the risk of developing cancer or because of their acute or chronic health risks. For TACs that are known or suspected carcinogens, ARB has consistently found that there are no levels or thresholds below which exposure is risk-free. Individual TACs vary greatly in the risk they present. At a given level of exposure, one TAC may pose a hazard that is many times greater than another. For certain TACs, a unit risk factor can be developed to evaluate cancer risk. For acute and chronic health risks, a similar factor called an HI is used to evaluate risk. In the early 1980s, ARB established a statewide comprehensive air toxics program to reduce exposure to air toxics. The Toxic Air Contaminant Identification and Control Act (Assembly Bill 1807, Tanner 1983) created California's program to reduce exposure to air toxics. The Air Toxics "Hot Spots" Information and Assessment Act (Assembly Bill 2588, Connelly 1987) supplements the Assembly Bill 1807 program by requiring a statewide air toxics inventory, notification of people exposed to a significant health risk, and facility plans to reduce these risks.

Local Air Quality

Air quality monitoring data for the Sacramento area are summarized in Table 3.14-2. These data are the most recent available, from the 2002 to 2004 monitoring period. Table 3.14-2 indicates that for the last 3-year monitoring period, the monitoring area has experienced occasional violations of the state 1-hour and 8-hour ozone standard and the stated PM10 standard, while the federal PM2.5 standard was also violated. During this period, the federal and state CO standards were not violated.

If a pollutant concentration is lower than the state or federal standard, the area is classified as being in attainment for that pollutant. If a pollutant violates the standard, the area is considered a nonattainment area. If data are insufficient to determine whether a pollutant is violating the standard, the area is designated unclassified. The State of California has designated SMAQMD a

serious nonattainment area for ozone and a nonattainment area for PM10. For several years, EPA has designated SMAQMD a severe nonattainment area for the 1-hour ozone standard and a moderate nonattainment area for PM10. On June 15, 2005, EPA redesignated the Sacramento area as a serious nonattainment area for the 8-hour ozone standards while dropping the 1-hour nonattainment designation. SMAQMD is in attainment for the state and federal CO standards.

Table 3.14-2. Ambient Air Quality Monitoring Data from Project Area Stations*

Pollutant Standards	2002	2003	2004
Ozone (O_3) (Bruceville Boulevard)			
Maximum 1-hour concentration (ppm)	0.096	0.108	0.096
Maximum 8-hour concentration (ppm)	0.082	0.089	0.086
Days standard exceeded			
NAAQS (1-hour) > 0.12 ppm	0	0	0
CAAQS (1-hour) > 0.09 ppm	1	10	1
NAAQS (8-hour) > 0.08 ppm	0	5	1
Carbon Monoxide (CO) (T Street)			
Maximum 8-hour concentration (ppm)	4.3	3.4	3.0
Maximum 1-hour concentration (ppm)	5.6	5.8	3.5
Days standard exceeded			
NAAQS (8-hour) ≥ 9.0 ppm	0	0	0
NAAQS (1-hour) ≥ 35 ppm	0	0	0
CAAQS (8-hour) ≥ 9.0 ppm	0	0	0
CAAQS (1-hour) ≥ 20 ppm	0	0	0
Particulate Matter (PM10) (Stockton Boulevard)			
Maximum 24-hour concentration ($\mu g/m^3$)	85.0	54.0	44.0
2nd Highest 24-hour concentration ($\mu g/m^3$)	56.0	47.0	43.0
Average arithmetic mean concentration ($\mu g/m^3$)	25.0	20.8	20.9
Average geometric mean concentration ($\mu g/m^3$)	21.0	21.6	21.6
Days standard exceeded			
NAAQS (24-hour) > 150 $\mu g/m^3$	0	0	0
CAAQS (24-hour) > 50 $\mu g/m^3$*	4	2	0
Particulate Matter (PM2.5) (Stockton Boulevard)			
Maximum 24-hour concentration ($\mu g/m^3$)	91.0	42.0	91.0
2nd Highest 24-hour concentration ($\mu g/m^3$)	71.0	28.0	71.0
Days standard exceeded			
NAAQS (24-hour) > 65 $\mu g/m^3$	2	0	0

Source: California Air Resources Board 2005; Environmental Protection Agency 2005.
*Sacramento, Stockton Boulevard, T Street and Elk Grove, Bruceville Boulevard Monitoring Stations [Stockton Boulevard (Sacramento), T Street (Sacramento) and Bruceville Boulevard (Elk Grove) Monitoring Stations
Recorded every six days.

Sensitive Receptors

Sensitive receptors are generally defined as locations at which people reside or at which the presence of air emissions could adversely affect the use of the land. Typical sensitive receptors include residents, school children, hospital patients, and the elderly. Sensitive receptors in the vicinity of the project area that could be affected by the proposed action include the following.

- Residences located along Freeport Boulevard
- A residential subdivision located north of the east end of the proposed Cosumnes River alignment.
- A residential subdivision located along Franklin Boulevard.

3.14.3 Impacts

Approach and Methodology

Construction Impact Assessment

Construction is a source of dust and exhaust emissions, which can have substantial temporary impacts on local air quality (i.e., exceed state air quality standards for PM10). Such emissions would result from earthmoving and use of heavy equipment, land clearing, ground excavation, cut and fill operations, and the construction of roadways. Dust emissions can vary substantially from day to day, depending on the level of activity, specific operations, and prevailing weather. A major portion of dust emissions for the proposed action would likely be caused by construction traffic on temporary construction roads.

Construction emissions were estimated by using the Road Construction Emissions model developed by the Sacramento Metropolitan Air Quality Management District. This is a public domain spreadsheet model formatted as a series of individual worksheets. The model enables users to estimate emissions using a minimum amount of project-specific information. The model estimates emissions for load hauling (on-road heavy-duty vehicle trips), worker commute trips, construction site fugitive PM_{10} dust, and off-road construction vehicles. Although exhaust emissions are estimated for each activity, fugitive dust estimates are currently limited to the major dust-generating activities, which include grubbing/land clearing and grading/excavation. The Industrial Source Complex Short Term (ISCST3) air emissions model (EPA) was used to model PM10 concentrations associated with construction of the proposed action.

Operation Impact Assessment

The primary operational emissions associated with the proposed action are CO, PM10, ROG, and NO_X emitted as vehicle exhaust. The effects of CO emissions were evaluated through CO dispersion modeling, as described below. The effects of PM10 and ozone precursors (ROG and NO_X) were evaluated through the conformity process, as described below.

Carbon Monoxide Dispersion Modeling

The ambient air quality effects of traffic emissions were evaluated using the CALINE4 dispersion model (Benson 1989). CALINE4 is a Gaussian dispersion model specifically designed to evaluate air quality impacts of roadway projects. Each roadway link analyzed in the model is treated as a sequence of short segments. Each segment of a roadway link is treated as a separate emission source producing a plume of pollutants that disperses downwind. Pollutant concentrations at any specific location are calculated using the total contribution from overlapping pollution plumes originating from the sequence of roadway segments.

Transportation Conformity

The proposed action is located in an area designated a moderate nonattainment area for the federal PM10 standards and, until recently, a severe nonattainment area for the federal 1-hour ozone precursor standards. On June 15, 2005, the federal 1-hour ozone standard was replaced with the 8-hour ozone standard. Because the region is in nonattainment for ozone, the proposed action must be evaluated under the transportation conformity requirements described previously. An affirmative regional conformity determination must be made before the proposed action can proceed. Design of the proposed action was included in the 2003/2005 Sacramento MTIP, 2025 Sacramento MTP, and 2004 STIP. These planning documents contained an adopted regional emissions analysis and conformity determination. As such, no further transportation conformity

analysis and determination was needed unless the scope of the proposed action changed significantly.

The MTP is updated every three years, and the SACOG Board adopted the most recent MTP on July 18, 2002. The MTIP is updated every two years, and the SACOG Board adopted the most recent MTIP on July 18, 2002. Federal law requires the use of the most current vehicle fleet information in a region's transportation conformity analysis. At the time, the most recent SIP's fleet information was about 10 years old.

The Sacramento Area Council of Governments (SACOG) is the agency responsible for demonstrating transportation conformity in our region. In 2002, SACOG estimated that applying the most current vehicle fleet data to our existing air quality models would result in a conformity lapse. The state Air Resources Board, SACOG, U.S. EPA, and FHWA negotiated approval to use the 1994 vehicle fleet data through December 31, 2002. After that time, conformity findings could be made only if the new fleet data were used. This means that the transportation plans and transportation improvement programs for our region, as well as 21 other air districts in the state, could not be changed until a new clean air plan was in place. The Sacramento region, unlike others in the state, was not planning to update the SIP before our attainment deadline (2005) when the new FHWA requirements were announced. (Sacramento Metropolitan Air Quality Management District 2003.)

Consequently, the Sacramento region entered a conformity "lockdown" after December 31, 2002. A conformity "lockdown" is a term coined by SACOG staff and means that no changes, additions, or deletions to non-exempt projects in either the MTP or MTIP may be made until a new SIP is approved by the EPA with new conformity budgets. The lockdown status also implied that only those projects included in the most recently approved MTP and MTIP could proceed with construction.

On October 4, 2004, the Sacramento area entered conformity lapse as a result of the failure of a project included in the MTIP and MTP to proceed with construction as planned. That project was the Shingle Springs Rancheria interchange project on Highway 50. As a result of the lapse, no projects included in the most recently approved MTIP and MTP could begin construction until a new MTIP and MTP were demonstrated to be conforming transportation plans.

On June 15, 2005, the federal 1-hour ozone standards were revoked and replaced with the 8-hour ozone standards. EPA's conformity rules require the continued use of the 1994 SIP budgets until replaced with an updated 8-hour budget. The Sacramento region has opted to replace the 1994 SIP budget with the 8-hour rate-of-progress budget (SMAQMD 2005). The rate-of-progress plan updates the allowable motor vehicle emissions budgets that SACOG must use in its regional conformity determinations.

To show that the upcoming 2005 MTP (which will include the I-5/Consumes River Blvd. interchange project) conforms to the revised transportation emissions budgets, SACOG will need to show that the aggregate transportation emissions in the region stay below the budgeted levels. Consequently, SACOG must demonstrate that the MTP is a conforming plan before the individual projects contained in the MTP can be approved. Once SACOG has demonstrated that the MTP is a conforming plan, then the I-5/Cosumnes River interchange project will be

considered a conforming project. Until such time, the I-5/Cosumnes River interchange is not part of a conforming plan and a final decision on the project will not be made. SACOG is anticipated to submit a new conformity determination for Federal approval in spring of 2006.

Build Alternative A: Franklin to Freeport North Alignment

Impact AQ-1: Direct Temporary Increase in Construction-Related Emissions

Construction activities for the proposed action would result in short-term impacts on ambient air quality in the area. Temporary construction emissions would result directly from grading and site preparation activities, and indirectly from construction equipment emissions and construction worker commuting patterns. Pollutant emissions would vary from day to day, depending on the level of activity, specific operations, and prevailing weather. It is anticipated that construction activities would continue for approximately 24 months.

Construction of the new roadway was broken down into four phases: grubbing/land clearing, grading/excavation, construction of the drainage/utilities/subgrade, and roadway paving. Construction emissions would result from material handling and heavy equipment operations. Because of the use of heavy construction equipment (with associated dust-generating potential), it is anticipated that site-grading activities would result in the highest daily fugitive dust generation.

SMAQMD has specified significance thresholds to determine whether mitigation is needed for project-related impacts on air quality (Table 3.14-3). For projects that exceed these levels, project applicants must implement as many feasible mitigation measures as possible to substantially lessen or avoid adverse air quality impacts.

Table 3.14-3. SMAQMD Significance Thresholds

Emissions	Ozone Precursor Emissions		PM10
	ROG (pounds per day)	NO_X (pounds per day)	
Construction (short-term)	None	85	CAAQS (50 $\mu g/m^3$ over a 24-hour Period)
Operational (long-term)	65	65	CAAQS

Maximum daily construction emissions are summarized in Table 3.14-4. As previously mentioned, construction activities were divided into separate phases and analyzed separately. Consequently, project significance is not a comparison of the sum of all construction phases to the SMAQMD threshold levels. Instead, if one phase of construction is found to have an adverse impact, the entire proposed action is considered to have an adverse air quality impact.

Table 3.14-4. Construction Emission Estimates

Construction Phase	ROG[a]	NO_X[a]	PM10[b]
Grubbing/Land Clearing	19	112	NA
Grading/Excavation	45	428	2524[c]
Drainage/Utilities/Sub-Grade	16	81	NA
Paving	11	67	NA
Threshold	None	85	50

Source: Road Construction Model Version 5.1
Note: PM10 estimates assume 50% control of fugitive dust from watering and associated dust control measures
[a] Emissions indicated in pounds per day.
[b] Emissions indicated in $\mu g/m^3$.
[c] PM10 emissions calculated only for the grading/excavation phase, which represents the phase with the highest daily fugitive dust generation.

As indicated within Table 3.14-4, construction-related emissions are anticipated to exceed SMAQMD's daily thresholds for NO_X and PM10; however, the City has committed to implement measures to reduce the severity of the effect (see Section 3.22.1 "Air Quality Environmental Commitments").

Impact AQ-2: Direct Permanent Increase in Local CO Concentrations at Nearby Intersections

The proposed action would add to traffic volumes on roads in and around the project area, and would worsen LOS at nearby intersections. CO modeling was performed to determine the significance of CO at various intersections for design-year with-project conditions. The modeled intersections were selected based on the worst-case LOS of the intersections, and the intersections with the greatest lane volumes. Six design year conditions were modeled for this analysis.

- 2005 General Plan (Scenario 3)
- 2005 General Plan plus Extension (Scenario 4)
- 2005 General Plan plus Extension plus Connection (Scenario 5)
- 2025 General Plan (Scenario 1)
- 2025 General Plan plus Extension (Scenario 2)
- 2025 General Plan plus Extension plus Connection (Scenario 3)

The modeled intersections included receptors located 30.5 m (100 ft) from the intersection diagonal to represent a worst-case scenario. Background CO concentrations were obtained by averaging the CO data for the last 3 years available at the nearest monitoring stations in the project area. Table 3.14-5 summarizes the results of CO dispersion modeling.

Table 3.14-5 indicates that the proposed action would not generate CO levels in excess of the ambient air quality standards indicated in Table 3.14-1.

Table 3.14-5. CO Modeling Concentrations (ppm) Results

Intersection	2005				2025			
	(No Project)		Build Alternatives A and B		(No Project)		Build Alternatives A and B	
	1-hour	8-hour	1-hour	8-hour	1-hour	8-hour	1-hour	8-hour
Freeport Boulevard/ Meadowview Road	7.1	5.1	7	5	6.4	4.6	6.3	4.5
24th Street/Meadowview Road	7	5	7	5	6.4	4.6	6.3	4.5
Franklin Boulevard/Mack Road	7.4	5.3	7.3	5.2	6.4	4.6	6.3	4.5
Franklin Boulevard/ Cosumnes River Boulevard	N/A	N/A	N/A	N/A	6.4	4.6	6.4	4.6

Notes: Background concentrations of 6.1 ppm and 4.4 ppm were added to the modeling 1-hour and 8-hour results, respectively.
The federal 1-hour standard is 35 ppm.
The federal 8-hour standard is 9 ppm.

Impact AQ-3: Direct Temporary Increased Health Risk Resulting from Exposure to Diesel Exhaust from Construction Activities

Based on information provided by the project engineers, it is anticipated that construction activities would continue for approximately 24 months. The assessment of cancer risk is typically based on a 70-year exposure period. Construction activities are sporadic, transitory, and short-term in nature, and once construction activities have ceased, so too have emissions from construction activities. Because exposure to diesel exhaust will be well below the 70-year exposure period, construction of the proposed action is not anticipated to result in an elevated cancer risk to exposed persons. Consequently, the estimation of diesel risks associated with construction activities is not anticipated to result in any adverse health risks.

Build Alternative B: Franklin to Freeport South Alignment

The impacts under this alternative would be the same as those described for Build Alternative A.

No-Build Alternative (No Project)

Under this alternative, no new roadway extension or connections would be built from Franklin Boulevard to I-5 or from I-5 to Freeport Boulevard. Consequently, this alternative would not result in any construction-related emissions. This alternative would maintain the existing roadway and intersection configurations. The results summarized in Table 3.14-5 indicate that no violations of federal CO standards are expected under this alternative.

3.14.4 Avoidance, Minimization and Mitigation Measures

No mitigation has been identified.

3.14.5 Cumulative Impacts

Operation of the proposed project would not generate CO levels in excess of the ambient air quality standards. Construction activities for the project will generate NO_X and PM10, and the City has committed to implement measures to reduce the severity of the effect (see Section 3.22.1 "Air Quality Environmental Commitments").

3.15 Noise

This section evaluates noise effects associated with the proposed action under the requirements of 23 CFR 772, "Procedures for Abatement of Highway Traffic Noise," Caltrans noise analysis policy as described in its Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction (Protocol) (California Department of Transportation 1998a) and NEPA. Information presented in this section is based on the noise study report prepared for the proposed action (Jones & Stokes 2003h). The report is available for review at the City offices.

The following is a brief discussion of terminology used in this discussion.

- **Sound:** A vibratory disturbance created by a vibrating object that when transmitted by pressure waves through a medium such as air is capable of being detected by a receiving mechanism, such as the human ear or a microphone.
- **Noise:** Sound that is loud, unpleasant, unexpected, or otherwise undesirable.
- **Decibel (dB):** A unitless measure of sound on a logarithmic scale that indicates the squared ratio of sound pressure amplitude to a reference sound pressure amplitude. The reference pressure is 20 micro-pascals.
- **A-Weighted Decibel (dBA):** An overall frequency-weighted sound level in dB that approximates the frequency response of the human ear.
- **Maximum Sound Level (L_{max}):** The maximum sound level measured during the measurement period.
- **Minimum Sound Level (L_{min}):** The minimum sound level measured during the measurement period.
- **Equivalent Sound Level (L_{eq}):** The equivalent steady state sound level that in a stated period of time would contain the same acoustical energy.
- **Percentile-Exceeded Sound Level (L_{xx}):** The sound level exceeded "xx" percent of a specific time period. For example, L_{10} is the sound level exceeded 10% of the time.
- **Day-Night Level (L_{dn}):** The energy average of the A-weighted sound levels occurring during a 24-hour period, with 10 dB added to the A-weighted sound levels occurring during the period from 10:00 p.m. to 7:00 a.m.

In general, human sound perception is such that a change in sound level of 3 dB is just noticeable, a change of 5 dB is clearly noticeable, and a change of 10 dB is perceived as doubling or halving the sound level.

3.15.1 Regulatory Setting

Federal Requirements

Federal Highway Administration

23 CFR 772 provides procedures for conducting noise studies for highway projects and implementing noise abatement measures to help to protect the public health and welfare, supply noise abatement criteria (NAC), and establish requirements for information to be given to local officials for use in planning and designing highways. Under this regulation, noise abatement must be considered for a Type 1 project if the project is predicted to result in a traffic noise impact. A Type I project is defined as a proposed federal or federal-aid highway project for construction of a highway on a new location, or the physical alteration of an existing highway that significantly changes the horizontal or vertical alignment or increases the number of through traffic lanes. The proposed action is a Type 1 project.

Table 3.15-1 summarizes FHWA's NAC. A traffic noise impact is considered to occur when the project results in a substantial noise increase, or when the predicted noise levels approach or exceed the NAC specified in the regulation.

Table 3.15-1. Activity Categories and Noise Abatement Criteria

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

Noise abatement measures that are reasonable and feasible and likely to be incorporated into the project, as well as noise impacts for which no apparent solution is available, must be identified before adoption of the final environmental document for a project. Primary consideration is given to exterior areas. In situations in which no exterior activities are affected by traffic noise, the interior criterion (Activity Category E) is used as the basis for noise abatement consideration.

National Environmental Policy Act

FHWA guidance (Federal Highway Administration 1995) states that, if noise impacts are identified under 23 CFR 772, "additional analysis must be done to determine the significance of the impacts." FHWA has not adopted specific thresholds for determining the significance of noise impacts. However, the FHWA guidance states, "this determination of significance should be based on the context and intensity of the impacts." In general, "context" relates to the project setting and the number of people affected by the impact, and "intensity" relates to the absolute noise level and the change in noise level. These factors are considered on a case-by-case basis in making significance conclusions for noise impacts under NEPA.

If impacts are determined to be significant after considering mitigation, the project must be processed with an EIS/Record of Decision rather than a Categorical Exclusion or Environmental Assessment/Finding of No Significant Impact. NEPA requires that an EIS provide a reasonably complete discussion of mitigation measures that could be implemented. NEPA does not require adoption of mitigation measures in an EIS unless required by agency regulations.

California Department of Transportation Traffic Noise Analysis Protocol for New Highway Construction and Reconstruction Projects

The Protocol specifies the policies, procedures, and practices to be used by agencies that sponsor new construction or reconstruction projects. The NAC specified in the Protocol are the same as those specified in 23 CFR 772. This report defines a noise increase as substantial when the predicted noise levels with project implementation exceed existing noise levels by 12 dBA-L_{eq}(h). The Protocol also states that a sound level is considered to approach an NAC level when the sound level is within 1 dB of the NAC identified in 23 CFR 772 (e.g., 66 dBA is considered to approach the NAC of 67 dBA, but 65 dBA is not).

Local Regulations

City of Sacramento General Plan

The City of Sacramento General Plan Noise Element provides land use compatibility guidelines for noise based on various land use types. Table 3.15-2 summarizes these guidelines. For traffic noise sources the noise element states that the maximum acceptable noise levels for new residential developments are 60 L_{dn} and 45 L_{dn} respectively for exterior and interior locations. Although these standard do not specifically apply to the proposed action, they can be used as a point of reference in identifying significance thresholds. The noise element also states that when a project is a noise generator, mitigation measures should be considered if the project would increase the L_{dn} at a noise-sensitive location by more than 4 dB, or cause the overall level to exceed that considered normally acceptable for the land use category, or be expected to generate significant adverse community response.

Sacramento City Code – Noise Chapter

Chapter 8.68 of the Sacramento City Code is used to limit noise from fixed sources such as swimming pool pumps, air-conditioners, and construction activity. The following noise standards apply to residential properties.

- From 7 a.m. to 10 p.m. the exterior noise standard shall be fifty-five (55) dBA.
- From 10 p.m. to 7 a.m. the exterior noise standard shall be fifty (50) dBA.

These noise standards are modified as indicated in Table 3.15-3 depending on the duration of the noise source.

Table 3.15-3. Noise Standard Modifiers

Cumulative Duration of the Allowance Intrusive Sound Decibels		Exterior Noise Standard	
		Daytime 7:00 a.m. to 10:00 p.m.	Nighttime 10:00 p.m. to 7:00 a.m.
1.	Cumulative period of 30 minutes per hour	55 dBA	50 dBA
2.	Cumulative period of 15 minutes per hour	60 dBA	55 dBA
3.	Cumulative period of 5 minutes per hour	65 dBA	60 dBA
4.	Cumulative period of 1 minute per hour	70 dBA	65 dBA
5.	Level not to be exceeded for any time per hour	75 dBA	70 dBA

Notes: Each of the noise limits specified in subsection B of this section shall be reduced by five dBA for impulsive or simple tone noises, or for noises consisting of speech or music.

If the ambient noise level exceeds that permitted by any of the first four noise limit categories specified in subsection B of this section, the allowable noise limit shall be increased in five dBA increments in each category to encompass the ambient noise level. If the ambient noise level exceeds the fifth noise level category, the maximum ambient noise level shall be the noise limit for that category. (Prior code § 66.02.201)

Section 8.68.080 of the ordinance states that construction activity between the hours of 7:00 a.m. and 6:00 p.m. Monday through Friday between 9:00 a.m. and 6:00 p.m. on Sunday is exempt from the ordinance.

3.15.2 Affected Environment

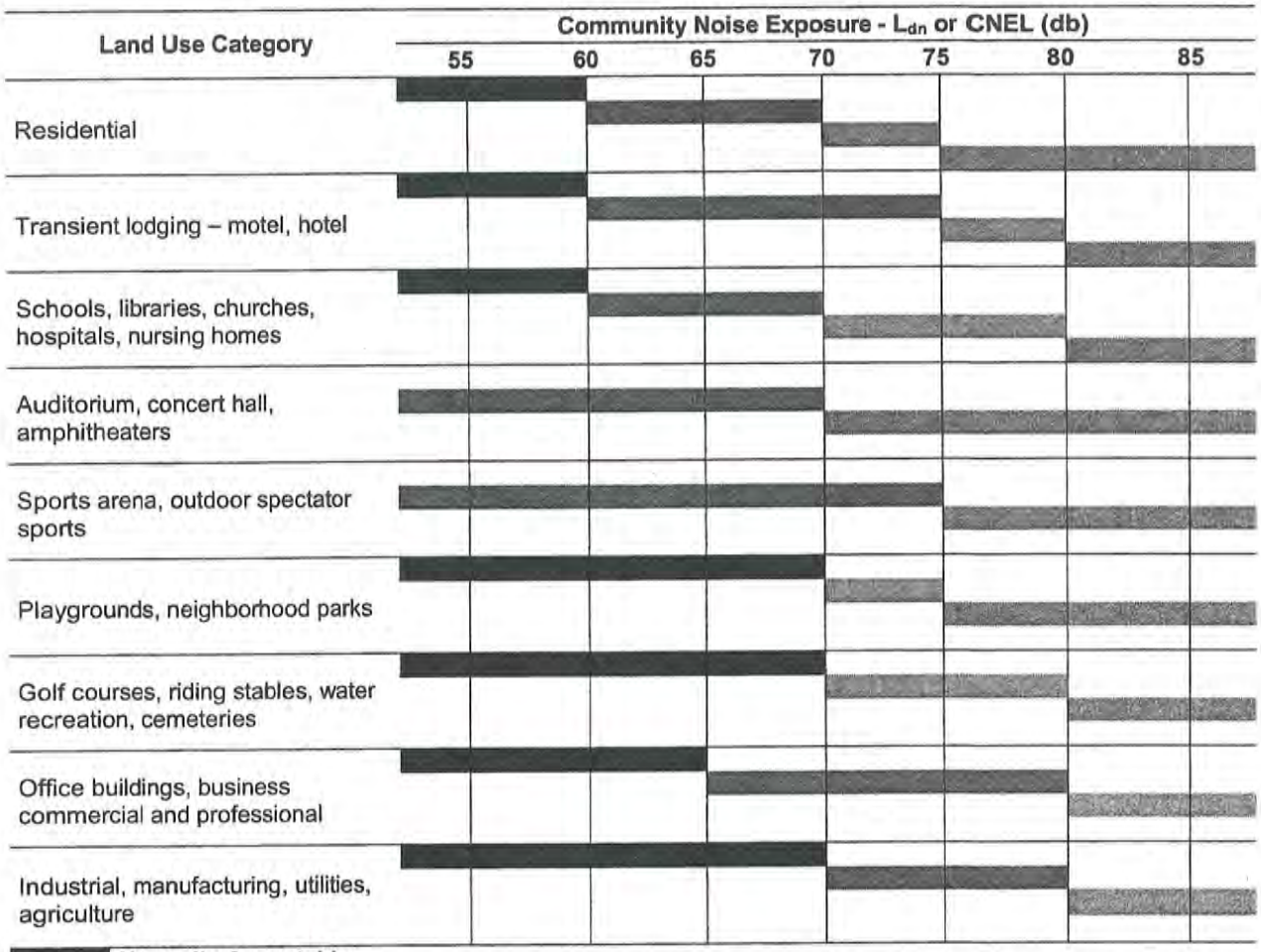
Noise-Sensitive Land Uses

As discussed previously and shown on Figure 3.2-1, the project area and vicinity is surrounded by urbanized uses, including the town of Freeport on the west, the SRCSD facility and the City of Elk Grove directly to the south, residential uses to the north and east, and a flood control detention basin and the North Delta Shores single-family residential project to the north. A field investigation was conducted to identify uses in the project area that could be subject to traffic noise impacts from the proposed action. Single-family residences located along the proposed alignments are identified as Activity Category B land uses as defined in Table 3.15-1. Commercial uses located in the project area are considered Activity Category C land uses. The Activity Category E interior NAC would apply at residences at which there is no exterior use.

As stated in the Protocol, noise abatement is considered only where noise impacts are predicted, frequent human use occurs, and a lowered noise level would be of benefit. As a matter of practice, frequent human use is considered to occur at exterior locations at which people are exposed to highway noise for 1 hour or more on a regular basis. As an extension of this concept, impacts are assessed only at locations at which frequent human use occurs and a lowered noise level would be beneficial. Therefore, impacts are typically assessed at residential locations with defined outdoor activity areas (e.g., backyards and patios) and parks with defined activity areas (e.g., playgrounds and picnic tables).

Activity Category B land uses in the vicinity of the proposed alignments include single-family residences north of the alignment west of Franklin Boulevard. Mesa Grande Park is an Activity Category B land use in this area. There are residences east of Franklin Boulevard north and south of the existing Cosumnes River Boulevard, but they are considered outside the project area. Additional single-family residences are located along Freeport Boulevard south of Stonecrest Avenue, the point at which the roadway extension would connect to Freeport Boulevard.

Table 3.15-2. Land Use Compatibility Standards for Community Noise Environments



Normally Acceptable:
Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

Conditionally Acceptable:
New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features are included in the design. Conventional construction, but with closed windows and fresh air supply system or air conditioning will normally suffice.

Normally Unacceptable:
New construction or development should be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirement must be made and needed noise insulation features included in the design.

Clearly Unacceptable:
New construction or development generally should not be undertaken.

Noise Source Characteristics: The land use/noise compatibility recommendations should be viewed in relation to the specific source of the noise. For example, aircraft and railroad noise is normally made up of higher single-noise events than auto traffic, but occurs less frequently. Therefore, different sources yielding the same composite noise exposure do not necessarily create the same noise environment.

Suitable Interior Environments: One objective of locating (both single and multi-family) residential units relative to a known noise source is to maintain a suitable interior noise environment at no grater than 45 dB CNEL or L_{dn}. This requirement, coupled with the measured or calculated noise reduction performance of the type of structure under consideration, should govern the minimum acceptable distance to a noise source.

Sources: City of Sacramento General Plan.

Activity Category C land uses in the project area include a commercial use near the Stonecrest Avenue/Freeport Boulevard intersection, but none are considered to have outdoor activity areas with frequent human use that would benefit from a lowered noise level. Accordingly, detailed evaluation of traffic noise impact and abatement is not considered warranted at any such land uses in the project area. Also, traffic noise impacts on Activity Category D land uses, including the SRCSD Bufferlands open space that forms the southern boundary of the project area, were not evaluated because there are no noise criteria for land uses in that area.

Given the stated land uses, detailed traffic noise modeling and impact assessment was conducted only at Activity Category B land uses adjacent to the proposed alignments at which frequent human use occurs and a lowered noise level would be of benefit. Detailed impact and abatement assessment was conducted for two areas: Area 1, residences north of the proposed alignment east of the UPRR tracks to Franklin Boulevard, and Area 2, residences west of I-5 along Freeport Boulevard.

Existing Sound Levels

The existing noise environment in the project area was characterized by noise monitoring and traffic noise modeling. Noise monitoring was conducted on Friday, August 8, 2003, using Larson-Davis Model 812 Precision Type 1 sound level meters. Monitoring was typically conducted for approximately 15 minutes at each position. The measurement positions are the lettered positions identified in Figures 3.15-1a and 3.15-1b. Because the proposed action involves construction of a new roadway, simultaneous traffic counts could not be taken. Table 3.15-4 summarizes the monitored short-term sound levels.

Table 3.15-4. Summary of Short-Term Sound Level Monitoring

Receiver	Location	Time	Duration (Minutes)	Measured Sound Level (dBA)		
				L_{eq}	L_{90}	L_{10}
Area 1						
A	Between 8128 and 8122 Torrente Way	3:04 p.m.	15	46.9	43.5	49.1
B	Middle of Mesa Grande Park	3:06 p.m.	15	43.6	37.9	46.1
C	Between 4080 and 4070 McNamara	3:56 p.m.	15	42.5	38.5	44.6
D	End of Stonecrest Avenue	4:45 p.m.	15	57.2	54.2	59.1
Area 2						
E	Freeport across from 8013 Freeport Boulevard	4:49 p.m.	15	59.3	45.4	63.1

Peak-hour traffic volumes used to model worst-hour traffic noise under existing conditions were provided by Fehr & Peers Associates (2005). Peak hour truck percentages were estimated from data obtained from Caltrans and typical vehicle mixes for similar roadways. Design year truck percentages were assumed to be the same as existing percentages. Receiver locations assessed using the Sound32 model are indicated in Figures 3.15-1a and 3.15-1b. These receiver locations include the monitoring locations (lettered positions) and additional receiver locations that are numbered for each modeling area (Areas 1 and 2).

This analysis focuses on receivers adjacent to the proposed alignments. The traffic noise model includes Cosumnes River Boulevard immediately east of Franklin Boulevard, Franklin and Freeport Boulevards immediately north and south of Cosumnes River Boulevard, and I-5

immediately north and south of Cosumnes River Boulevard. Table 3.15-5 summarizes the modeled worst-hour noise levels under existing conditions.

This analysis evaluates traffic noise from the Cosumnes River Boulevard extension only. It does not address noise from the proposed RT light rail extension that will run parallel to the extension because information sufficient for a detailed evaluation is not publicly available. A noise study is currently being conducted for the light rail project. Preliminary results of the study indicate that operation of the light rail will not result in noise impacts. However, the study indicates that the combined noise effect of the light rail operation and traffic on the extension will result in noise impacts requiring consideration of a noise barrier (Mansen pers. comm.). These results are consistent with the results presented herein.

3.15.3 Impacts

Approach and Methodology

Construction impacts are considered temporary, and operational traffic noise impacts are considered permanent.

23 CFR 772 Assessment

Build Alternative A: Franklin to Freeport North Alignment

Impact NZ-1: Permanent Exposure to Operational Traffic Noise

23 CFR 772 requires that traffic noise impacts and construction noise impacts be evaluated. Because the areas adjacent to the project corridor are undeveloped farmland, the location of the alignment has little effect on the traffic noise results at existing residences. For this reason, only Alternative A (preferred alignment) was evaluated in detail. Results for Alternative B would be essentially the same. Under Build Alternative A, traffic noise impacts are predicted to occur in Area 1 as a result of substantial increases in noise and predicted noise levels that approach or exceed 67 dB-Leq(h). In Area 2, traffic noise impacts are predicted to occur because predicted noise levels approach or exceed 67 dB-Leq(h). Because traffic noise impacts are predicted to occur at Activity Category B land uses, noise abatement must be considered.

This analysis evaluates traffic noise from the Cosumnes River Boulevard extension only. It does not address noise from the proposed RT light rail extension that will run parallel to the extension because information sufficient for a detailed evaluation is not publicly available. A noise study is currently being conducted for the light rail project. Preliminary results of the study indicate that operation of the light rail will not result in noise impacts. However, the study indicates that the combined noise effect of the light rail operation and traffic on the extension will result in noise impacts requiring consideration of a noise barrier (Mansen pers. comm.). These results are consistent with the results presented herein.

In addition, noise from train operations on the UPRR line is not considered in this analysis because there are only 12 train passages per day (Smith pers. comm.) and it is unlikely that a train passage would coincide with the worst traffic noise hour on a regular basis. Noise from UPRR train passages are considered in the CEQA analysis in Chapter 4 because that analysis uses a 24-hour average sound level for the evaluation.

Table 3.15-5. Summary of Traffic Noise Modeling Results

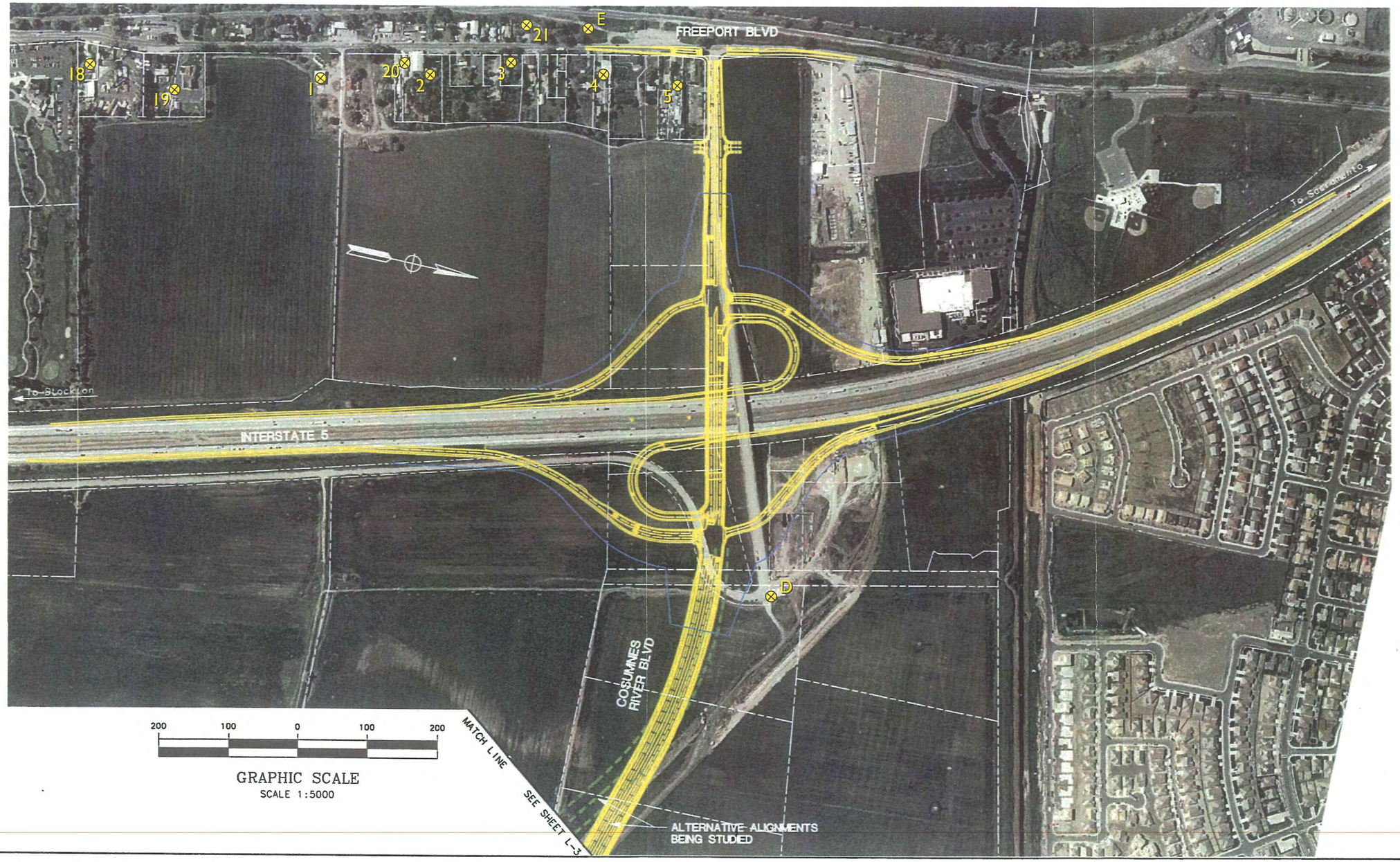
Receiver	Area Located	Type of Development	Activity Category Noise Abatement Criterion (dB-L[h])	Existing Worst Noise Hour Noise Level (dB-L_{eq}[h])	Predicted[a] Worst Noise Hour Noise Level (dB-L_{eq}[h])	Noise Increase (dB)	Impact Type[b]
R1	Area 2	Residence	B (67 dB)	60	63	3	None
R2	Area 2	Residence	B (67 dB)	61	64	3	None
R3	Area 2	Residence	B (67 dB)	63	68	5	A/E
R4	Area 2	Residence	B (67 dB)	62	66	4	A/E
R5	Area 2	Residence	B (67 dB)	60	64	4	A/E
R6	Area 1	Residence	B (67 dB)	41	58	17	S
R7	Area 1	Residence	B (67 dB)	42	57	15	S
R8	Area 1	Residence	B (67 dB)	44	56	12	S
R9	Area 1	Residence	B (67 dB)	46	54	8	None
R10	Area 1	Residence	B (67 dB)	49	55	6	None
R11	Area 1	Residence	B (67 dB)	53	58	5	None
R12	Area 1	Residence	B (67 dB)	63	67	4	A/E
R18	Area 2	Residence	B (67 dB)	60	63	3	None
R19	Area 2	Residence	B (67 dB)	60	63	3	None
R20	Area 2	Residence	B (67 dB)	62	66	4	A/E
R21	Area 2	Residence	B (67 dB)	63	67	4	A/E

Notes:

Values are the same for both build alternatives.

A/E = noise abatement criterion threshold approached or exceeded.
S = substantial increase.

[a] Predicted for design year 2025 based on cumulative 2025 traffic scenario.
[b] None = no impacts identified.



01120.01 EIS/EIR (revised 10-05)

Key: Letters = Noise Monitoring Location
Numbers = Noise Modeling Location

Figure 3.15-1a
Noise Modeling and Monitoring Locations

Source: Mark Thomas

Key: Letters = Noise Monitoring Location
Numbers = Noise Modeling Location

Figure 3.15-1b
Noise Modeling and Monitoring Locations

01120.01 EIS/EIR (revised 10-05)

Impact NZ-2: Temporary Exposure to Construction Noise

During construction of the project, noise from construction activities may intermittently dominate the noise environment in the immediate area of construction. To minimize disruption of traffic flows on I-5 during work on the interchange, nighttime construction may be required. Construction noise is regulated by Caltrans' standard specifications (Section 7-1.01I, "Sound Control Requirements"), which state that noise levels generated during construction will comply with applicable local, state, and federal regulations and that all equipment will be fitted with adequate mufflers according to the manufacturers' specifications.

Table 3.15-6 summarizes noise levels produced by construction equipment that is commonly used on roadway construction projects. Construction equipment is expected to generate noise levels ranging from 70 to 90 dBA at a distance of 15 m (50 ft). Noise produced by construction equipment would be reduced over distance at a rate of about 6 dB per doubling of distance. With buildout of North Delta Shores, located north of the project area, the closest residences are estimated to be approximately 500 feet from the area of potential active nighttime construction. Construction noise at this distance could therefore be in the range of 50 to 70 dBA.

Table 3.15-6. Construction Equipment Noise

Equipment	Maximum Noise Level (dBA L_{eq} at 15 meters [50 feet])
Scrapers	89
Bulldozers	85
Heavy trucks	88
Backhoe	80
Pneumatic tools	85
Concrete pump	82

Source: Federal Transit Administration 1995.

Construction would be conducted in accordance with Caltrans' standard specifications and would be short-term, intermittent, and in most cases dominated by local traffic noise.

NEPA Impact Assessment

Impact NZ-1: Permanent Exposure to Operational Traffic Noise

The traffic noise modeling results presented in Table 3.15-5 indicate that implementation of Alternative A would result in substantial increases in traffic noise at residential locations near the west end of Area 1. This is a relatively quiet suburban residential subdivision and there would be a 15 to 17 dB increase in noise levels. Mitigation has been identified for this effect (NZ-1).

Impact NZ-2: Temporary Exposure to Construction Noise

Construction would be conducted in accordance with Caltrans' standard specifications and would be short-term, intermittent, and in most cases dominated by local traffic noise.

Build Alternative B: Franklin to Freeport South Alignment

The impacts under this alternative would be the same as those described for Build Alternative A.

3.15.4 Abatement Measures

Noise Abatement Under 23 CFR 772

As stated in the Protocol, noise abatement is considered only where noise impacts are predicted, frequent human use occurs, and a lowered noise level would be of benefit. Potential noise abatement measures identified in 23 CFR 772 include avoiding the impact by using design alternatives, such as altering the horizontal and vertical alignment of the project; constructing noise barriers; acquiring property to serve as a buffer zone; using traffic management measures to regulate types of vehicles and speeds; and acoustically insulating public use or nonprofit institutional structures.

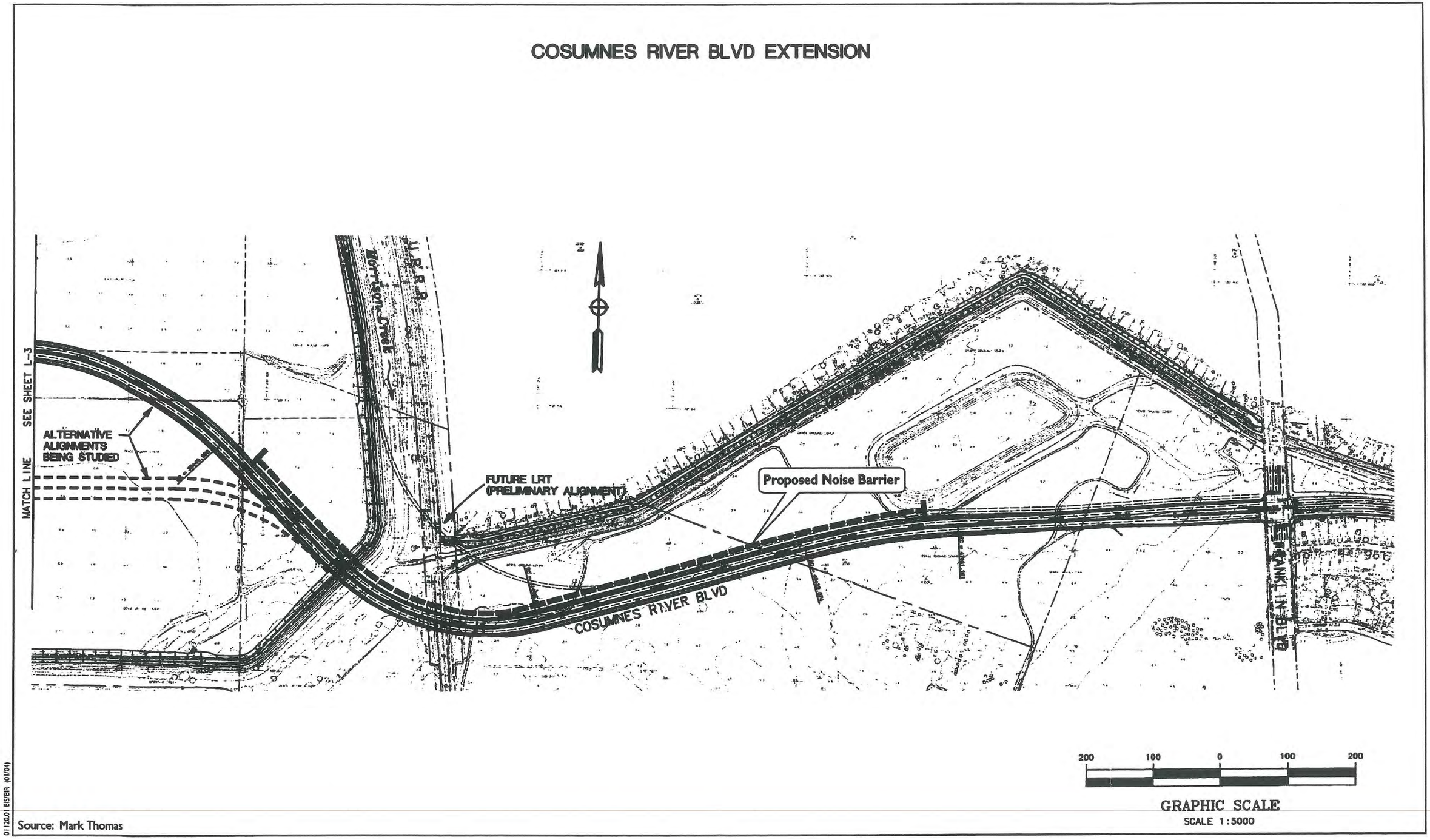
Based on the configuration and location of the project, noise barrier abatement is the primary form of noise abatement considered. Noise abatement was evaluated for residences predicted to be exposed to traffic noise impacts in Areas 1 and 2. For a barrier to be considered feasible, it must provide at least 5 dB of noise reduction.

Because residences in Area 2 along Freeport Boulevard have driveways that directly access the roadway, a noise barrier constructed between the residences and Freeport Boulevard would have substantial gaps that preclude achieving a 5-dB noise reduction. Therefore, a noise barrier along Freeport Boulevard is not considered feasible.

A new noise barrier was evaluated in detail along the westbound (north) side of the proposed alignment in Area 1. Barrier heights of 2.4 to 4.1 m (8 to 14 ft), relative to the elevation at the edge of shoulder, in 0.6-m (2-ft) increments were considered. Based on guidance in Chapter 1100 of the Highway Design Manual, barriers at the edge of pavement are limited to 4.1 m (14 ft) high. The preliminary noise barrier configuration considered is described below.

Noise Barrier 1 (Along Side of Westbound Cosumnes River Boulevard): This barrier would be a new barrier constructed along the north edge of the pavement of Cosumnes River Boulevard. The barrier would extend from Station 36+00 to 47+20 (west to east). (Figure 3.15-2).

Because there is no difference in predicted noise between Build Alternatives A and B, noise barrier feasibility and reasonableness were assessed for Build Alternative A traffic conditions only. Table 3.15-7 summarizes the results of the analysis for the noise barrier; it addresses only receivers that would be affected by the barrier. Additional receivers have been added to facilitate the reasonableness analysis (Figures 3.15-1a and 3.15-1b).



Source: Mark Thomas

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Figure 3.15-2
Noise Barrier Location

Table 3.15-7. Noise Barrier Reduction

Receiver	Type of Development	Activity Category Noise Abatement Criterion (dB-Leq[h])	Number of Houses Represented	Noise Reduction Relative to Future Project (No Wall) Conditions (Barrier Height)			
				2.4 meters (8 feet)	3.1 meters (10 feet)	3.7 meters (12 feet)	4.1 meters (14 feet)
6	Residence	B (67 dB)	3	-5	-6	-7	-8
6A	Residence	B (67 dB)	4	-4	-5	-6	-7
6B	Residence	B (67 dB)	9	-4	-5	-5	-6
6C	Residence	B (67 dB)	6	-3	-4	-5	-6
6D	Residence	B (67 dB)	11	-3	-3	-4	-4
6.1	Residence	B (67 dB)	7	-4	-5	-6	-7
7	Residence	B (67 dB)	7	-4	-5	-6	-6
7A	Residence	B (67 dB)	10	-3	-4	-4	-5
7B	Residence	B (67 dB)	11	-3	-4	-4	-5
7C	Residence	B (67 dB)	34	-3	-4	-4	-5
7D	Residence	B (67 dB)	28	-2	-3	-3	-3
7.1	Residence	B (67 dB)	5	-3	-4	-4	-5
8	Residence	B (67 dB)	5	-2	-3	-4	-4
8A	Residence	B (67 dB)	4	-1	-2	-3	-3
8B	Residence	B (67 dB)	4	-2	-3	-3	-4
8C	Residence	B (67 dB)	8	-2	-2	-3	-2

In accordance with the Protocol, a noise barrier must provide a design noise level reduction of 5 dBA to be considered acoustically feasible. As part of the reasonableness evaluation, reasonable cost allowances were evaluated based on the procedure identified in the Protocol; Table 3.15-8 summarizes the results of the assessment. The total allowance for the highest noise barriers considered is $3,552,000 for the 4.3-m (14-ft) soundwall. Because this value is less than 50% of the total estimated project construction cost, modification of the total allowance is not required.

Table 3.15-8. Noise Barrier Feasibility and Reasonableness Allowances

Noise Barrier	Height (meters [feet])	Provides 5 dB of Noise Reduction?	Number of Benefited Residences	Reasonable Allowance per Residence	Total Reasonable Allowance
Barrier 1: Along westbound (north) side of Cosumnes River Boulevard from Station 36+00 to 47+20 (west to east).	2.4 (8)	Yes	3	$35,000	$105,000
	3.1 (10)	Yes	30	$37,000	$1,110,000
	3.7 (12)	Yes	36	$37,000	$1,332,000
	4.3 (14)	Yes	96	$37,000	$3,552,000

For a noise barrier to be considered reasonable from a cost perspective, the total estimated cost of the barrier should be equal to or less than the total allowance calculated for that barrier. The cost calculations of the noise barrier should include all items appropriate and necessary for construction of the noise barrier, such as traffic control, drainage modification, and retaining walls.

Table 3.15-9 summarizes the preliminary cost estimate for each of the barrier heights evaluated. These costs were prepared by the Mark Thomas & Company, the project engineer (Fleming pers. comm.).

Table 3.15-9. Preliminary Noise Abatement Reasonableness Determination

Noise Barrier	Height (meters [feet])	Estimated Construction Cost	Total Reasonable Allowance	Preliminary Reasonableness Determination
Barrier 1: Along westbound (north) side of Cosumnes River Boulevard Station 36+00 to 47+20 (west to east).	2.4 (8)	$838,000	$105,000	Not reasonable
	3.1 (10)	$1,076,000	$1,110,000	Reasonable
	3.7 (12)	$1,317,000	$1,332,000	Reasonable
	4.3 (14)	$1,632,000	$3,552,000	Reasonable

The noise abatement design presented in this report is preliminary and has been conducted at a level appropriate for environmental review. Information on the physical characteristics of potential abatement measures (e.g., physical location, length, and height of noise barriers) is preliminary. The preliminary noise abatement design may be changed or eliminated from the final project design. Inclusion of noise barriers in the project design and the final design of those noise barriers, if included, will be decided based on the information contained in this report, final project design, and other pertinent information received during the public review process. The final design must also be checked independently to confirm that it meets the requirements of Chapter 1100 of the Highway Design Manual.

Noise Abatement under NEPA

Proposed Mitigation Measure NZ-1: Construct a Noise Barrier Along the North Side of the Alignment West of Franklin Boulevard

Implementation of a minimum 3.1-m-high (10-ft-high) wall extending from Station 36+00 to 47+20 (west to east), as discussed above, would reduce increases in traffic noise to less than a 12-dB increase and would therefore eliminate substantial increases in traffic noise resulting from the project.

As discussed above, the noise abatement design presented in this report is preliminary and has been conducted at a level appropriate for environmental review. Information on the physical characteristics of potential abatement measures (e.g., physical location, length, and height of noise barriers) is preliminary. The preliminary noise abatement design may be changed or eliminated from the final project design. Inclusion of noise barriers in the project design and the final design of those noise barriers, if included, will be decided based on the information contained in this report, final project design, and other pertinent information received during the public review process.

3.15.5 Cumulative Impacts

The traffic noise modeling results presented in Table 3.15-5 represent cumulative noise conditions that are based on cumulative traffic conditions. These cumulative traffic conditions include the effect of the project alternatives. Implementation of either Build Alternative is predicted result in a cumulatively considerable contribution to cumulative noise conditions that will exceed 60 Ldn at residential areas in Areas 1 and 2. An alternative's contribution is considered to be cumulatively considerable if it is greater than 1 dB relative to no project conditions. If a barrier is constructed along the north side of the alignment as indicated in Mitigation Measure NZ-1, the contribution of project alternatives to noise that exceeds 60 Ldn

would no longer be considerable in Area 1. At Area 2 where noise barriers are not feasible, the contribution of either Build Alternative to cumulative noise conditions would remain considerable.

3.16 Energy

This section addresses issues related to energy use related to the proposed action.

3.16.1 Regulatory Setting

Federal Requirements

Corporate Average Fuel Economy Standards

Corporate Average Fuel Economy (CAFE) standards are federal regulations set to reduce energy consumed by on-road motor vehicles. They specify minimum fuel consumption efficiency standards for new automobiles sold in the United States. The current standard for passenger cars is 44.3 km per gallon (kmpg) (27.5 miles per gallon [mpg]). The 1998 standard for light trucks was 44.3 kmpg (20.7 mpg) (Competitive Enterprise Institute 1996). In April 2002, the National Highway Traffic Safety Administration, part of the U.S. Department of Transportation, issued a final rule for CAFE standards for model-year 2004 light trucks that codified the 44.3-kmpg (20.7-mpg standard); this level is now in effect (U.S. Department of Transportation 2002a).

Transportation Equity Act for the 21st Century

The Transportation Equity Act for the 21st Century, passed in 1998, is intended to protect and enhance communities and the natural environment as development occurs in the transportation sector. It builds on the initiatives established in the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA), the previous major authorizing legislation for surface transportation. The ISTEA identified planning factors for use by metropolitan planning organizations in developing transportation plans and programs, which under the ISTEA are required to "[p]rotect and enhance the environment, promote energy conservation, and improve quality of life" and to consider the consistency of transportation planning with federal, state, and local energy goals (U.S. Department of Transportation 2002b).

State Regulations

California Assembly Bill 1X

On February 1, 2001, California Governor Gray Davis signed into law Assembly Bill 1X, which authorized DWR to purchase electricity under long-term contracts and resell it to Southern California Edison and PG&E, which as a result of financial constraints were unable to enter into long-term power contracts with power generators. Assembly Bill 1X is significant because it made the state government an active participant in the California power industry (California Energy Commission 2002a).

3.16.2 Affected Environment

Energy Supply and Demand

California is the tenth-largest energy consumer worldwide and is ranked second among the states behind Texas. Within California, the transportation sector uses the largest amount of energy. Petroleum, the largest component of California's fuel supply, is the major fuel used for transportation. Stationary users are the largest consumers of electricity and natural gas in general.

Petroleum

California's petroleum (gasoline and diesel fuel) consumption is driven by its demand for transportation services, which mirrors its growth of population and economic output. Historical trends and current population and economic growth projections indicate that transportation sector petroleum use will increase by approximately 40% between 1999 and 2020: gasoline from 13.9 billion gallons to 19.9 billion gallons, and diesel fuel from 2.4 billion gallons to 4.8 billion gallons.

The California Energy Commission (CEC) projects that unless major changes to the in-state oil refining industry are made, in-state oil refining capacity will lag behind the forecasted increase in demand, leading to sudden price increases for gasoline and diesel fuels over sustained time periods. Also, foreign imports currently account for approximately 29% of the state's petroleum supply. This percentage is expected to increase as in-state and Alaskan oil production declines, adding to the supply-side risks for the state. (California Energy Commission 2002b.)

The transportation fuel market is also affected by public and environmental concerns. Strong growth in gasoline demand, combined with the transition to Phase 3 reformulated gasoline because of the recent phase-out of fuel additive methyl tertiary butyl ether (MTBE) and the accompanying expanded use of ethanol to meet the federal minimum oxygen requirement, could substantially affect the balance between transportation fuel supply and demand in California and impair the ability of refiners to consistently supply sufficient volumes of gasoline to meet state demand. Also, revisions of state and federal regulations to tighten specifications for diesel fuel to reduce its environmental impacts are underway. According to CEC (2002b), it will be difficult for the state to rely solely on petroleum-based fuels in the future if it desires a stable transportation fuel market.

3.16.3 Impacts

Approach and Methodology

A roadway project can cause an increase in energy consumption by increasing the number of vehicle miles traveled (VMT) or by increasing the amount of traffic congestion in the project area. If drivers must drive a greater distance to get to their destinations than they did before a project was built, they will consume more energy unless the project reduces traffic congestion enough to offset the extra energy used in driving farther. Similarly, if a project increases the amount of traffic congestion in the project area, more energy may be consumed during the additional idling and driving time caused by the increased traffic congestion.

Because the proposed action would not increase VMT or traffic congestion (refer to Table 3.7-20), it is not expected to result in an increase in energy consumption. Therefore, a detailed quantitative energy analysis was determined unnecessary. Instead, impacts associated with energy are assessed qualitatively.

Build Alternative A: Franklin to Freeport North Alignment

Impact E-1: Increase in Petroleum Demand during Construction

Construction of this alternative is expected to take place over a period of 18 to 24 months. Therefore, it is unlikely that construction would consume enough energy over a long enough period that local energy suppliers would have difficulty supplying regional energy demand. The

beneficial effects of increased energy efficiency resulting from reduced congestion and idling on the existing routes presumably would result in an eventual net energy payback over time of the energy used for construction.

Impact E-2: Potential Increase in Energy Consumption from Project Operations

This alternative has the potential to decrease travel time for individuals traveling from the eastern side of the project area (Franklin Boulevard in South Sacramento) to the western side of the project area (Freeport and I-5). This alternative would provide a more direct route for travel between these areas, and has the potential to both decrease travel time and reduce congestion on other routes that are currently used for this purpose. Therefore, operation of this alternative is not expected to result in any increase in energy consumption, and it could result in more efficient energy use for meeting the mobility needs in the region.

Build Alternative B: Franklin to Freeport South Alignment

The impacts under this alternative would be the same as those described for Build Alternative A.

No Build Alternative (No Project)

This alternative would not affect energy use.

3.16.4 Avoidance, Minimization and Mitigation Measures

No measures have been identified.

3.16.5 Cumulative Impacts

The proposed action would not contribute to any cumulative energy impacts because it would not increase the need for energy in the region.

3.17 Wetlands and Other Waters of the United States

3.17.1 Introduction

This section addresses effects on the wetlands and other waters of the United States in the project area. The information below is summarized from the wetland delineation prepared for the proposed action (Jones & Stokes 2003i) and updated design information provided by the City's engineering consultant. This wetland delineation report is available for public review at City offices. The wetland delineation report was submitted to the Corps for verification on February 28, 2003. The survey methods and results are described below under "Affected Environment."

3.17.2 Regulatory Setting

The federal government supports a policy of minimizing "the destruction, loss, or degradation of wetlands" (EO 1990, May 24, 1977). Wetland and riparian habitats are considered sensitive locally, regionally, and statewide because of their habitat values and because they are in decline across the state. Substantial statewide decline of wetland and riparian communities in recent years has increased concerns about dependent plant and wildlife species, leading state and federal agencies to adopt policies to arrest further loss. DFG has adopted a no-net-loss policy for wetlands (California Department of Fish and Game 1987). In addition, U.S. Fish and Wildlife Service (USFWS) mitigation policy identifies California's riparian habitats in Resource Category 2, for which no net loss of existing habitat value is recommended (46 Federal Register [FR] 7644, January 23, 1981). The following sections provide additional detail for specific federal and state requirements regarding wetlands and other waters of the United States.

Federal Requirements

Clean Water Act Section 404

The Corps and EPA regulate the placement of fill into "waters of the United States" under CWA Section 404. Project proponents must obtain a permit from the Corps for all discharges of fill material into waters of the United States before proceeding with a proposed action. The Corps may either issue individual permits on a case-by-case basis or general permits on a program level. General permits exist to cover similar activities that are expected to cause only minimal adverse environmental effects. Nationwide permits (NWPs) are a type of general permit that cover particular fill activities. All NWPs have a general set of conditions that must be met for the permits to apply to a particular project, as well as specific conditions that apply to each NWP.

Executive Order 11990: Protection of Wetlands

EO 11990, signed May 24, 1977, directs all federal agencies to refrain from assisting in or giving financial support to projects that encroach on publicly or privately owned wetlands. It further requires that federal agencies must support a policy to minimize the destruction, loss, or degradation of wetlands. Such a project (that encroaches on wetlands) may not be undertaken unless the agency has determined that: (1) there are no practicable alternatives to such construction, (2) the project includes all practicable measures to minimize harm to wetlands that would be affected by the project, and (3) the impact will be minor.

State Requirements

California Fish and Game Code Sections 1600 et seq.

Under California Fish and Game Code Sections 1600 et seq., Caltrans and other agencies are required to notify DFG before any project that would divert, obstruct, or change the natural flow, bed, channel, or bank of any river, stream, or lake. Preliminary notification and project review generally occur during the environmental process. When an existing fish or wildlife resource may be substantially adversely affected, DFG is required to propose reasonable project changes to protect the resources. These modification are formalized in an Streambed Alteration Agreement (SAA) that becomes part of the plans, specifications, and bid documents for the project.

3.17.3 Affected Environment

Survey Methods

Field visits by wetland ecologists were conducted on April 16 to 18, August 29, November 7, and December 5 and 6, 2001, and January 4 and February 20, 2002, to delineate wetlands and other waters of the United States in the project area. For the purposes of the surveys, the project area was based on maps of the alternative alignments provided by Mark Thomas & Company and an assumed maximum 61-m-wide (200-ft-wide) corridor in sensitive areas for construction of the proposed interchange, Cosumnes River Boulevard intersections with Freeport and Franklin Boulevards, new roadway, and embankment.

Wetlands were delineated using the routine onsite determination method outlined in the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987), which outlines a three-parameter approach based on the presence of hydrophytic vegetation, wetland hydrology, and hydric soils. The jurisdictional boundaries for other waters of the United States were identified based on the presence of an ordinary high-water mark (OHWM) as defined in 33 CFR 328.3(e). Data were obtained from wetlands, other waters of the United States, nonjurisdictional aquatic features, and adjacent upland habitats to delineate the jurisdictional boundary between wetlands and uplands. Irrigation and drainage ditches in the project area were evaluated to determine whether they meet the manual's wetland criteria and to assist in determining whether they are considered jurisdictional wetland drainageways or nonjurisdictional agricultural ditches. The wetland delineation report contains a complete discussion of the methods used to delineate waters of the United States, including wetlands (Jones & Stokes 2003i).

Historic photographs and a 1988 wetland determination from the U.S. Soil Conservation Service (SCS) (now the NRCS) were reviewed to determine whether any agricultural wetlands had been previously delineated in the project area. The final wetland delineation for the North Beach Lake and SRWTP Levee Improvement Project (Sacramento Area Flood Control Agency and Sacramento Regional County Sanitation District 1995) and the verified delineation for the Lower Northwest Interceptor Project (U.S. Army Corps of Engineers 2002) were examined for the areas at which their project areas overlap with the project area for the proposed action.

Survey Results

Three wetland types were identified in the project area: seasonal emergent wetland, freshwater marsh, and vegetated stream and drainageway. Morrison and Union House Creeks qualify as other waters of the United States. There are no Rivers and Harbors Act Section 10 "navigable

waters" in the project area. The Sacramento River is located in the project vicinity, west of the project area.

The methods used to delineate wetlands and a resource table of wetlands corresponding to map numbers and wetland data forms are provided in the wetland delineation (Jones & Stokes 2003i). Figures 3.17-1a and 3.17-1b identify features in the project area that may qualify as wetlands or other waters of the United States. Information regarding the extent of jurisdictional wetlands is preliminary subject to verification by the Corps.

Seasonal Emergent Wetland

Seasonal emergent wetland can support a combination of wetland-generalist species, wide-ranging species commonly associated with vernal pool habitats, and upland species. Dominant plant species include rabbitsfoot grass, Italian ryegrass, curly dock, cocklebur, Mediterranean barley, and Harding grass. Occasional vernal pool species are found in seasonal emergent wetland, such as coyote thistle, slender popcorn flower, and purslane speedwell. The scientific names of plant species encountered in the project area are contained in Appendix C.

Many of the seasonal wetlands in the project area have been subjected to disturbance, such as plowing, grading, or filling. Seasonal emergent wetlands develop in depressions in areas with a water table that is perched near the surface by bedrock or an impermeable soil horizon, such as a claypan or hardpan. They are inundated during the winter rainy season (generally between December and March) and are dry during the intervening months. Seasonal wetlands that are connected hydrologically to a jurisdictional drainage (i.e., that are adjacent) are considered jurisdictional.

Freshwater Marsh

Freshwater marsh is located within the floodplain of Morrison and Union House Creeks (wetland features 3, 4, and 6) and west of the UPRR line (wetland feature 4) (Figures 3.17-1a and 3.17-1b). Vegetation is dominated by hydrophytic grasses and grasslike species. Dominant herbaceous hydrophytic vegetation includes hardstem bulrush, broad-leaved cattail, perennial peppergrass, curly dock, Baltic rush, water smartweed, willow smartweed, common scouring rush, and Bermuda grass. Freshwater marsh often supports scattered riparian species such as willows, Fremont's cottonwood, blue elderberry, Himalayan blackberry, and California blackberry (Appendix C).

Hydrology is provided by association with perennial or near-perennial surface water sources, such as overland flow from rivers or other surface water sources, ponded seasonal precipitation, and shallow groundwater tables. Soils of freshwater marshes are formed as alluvial fans or basin floors associated with fluvial processes. Soils primarily are fine-textured clay, silt loam, or silty clay loam.

Freshwater marsh wetlands in the project area occur in depressional areas (wetland features 3 and 4) and within the Morrison Creek floodplain (wetland features 6 and 8) (Figures 3.17-1a and 3.17-1b). Because of the shallow groundwater in the area, these wetlands likely have groundwater exchange functions. The freshwater marsh vegetation in the Morrison Creek floodplain also reduces erosion by stabilizing the streambank and slows and stores peak

floodflows. Freshwater marsh and the associated riparian trees are productive wildlife foraging and breeding habitat.

Streams and Drainageways

Stream and drainageway features have a defined bed and bank. Morrison and Union House Creeks are the only streams/drainageways in the project area with open water primarily composing their central channel.

Within the project area (defined above under "Survey Methods," Morrison and Union House Creeks have cement-lined, low-flow channels and are moving water systems with low function for groundwater exchange, flood alteration, and water quality improvement.

Feature 9 (Figure 3.17-1b), the only drainageway mapped in the project area, has a bed and bank, but is vegetated. It supports freshwater marsh species such as tule, knotweed, annual sunflower, and saltgrass, as well as willows and herbaceous wetland species at one end. This drainageway follows the abandoned channel meander of Morrison Creek. The drainageway also receives water in the form of surface runoff that ponds for a sufficient duration during the growing season to support the wetland vegetation. This drainageway is mapped within areas of hydric soils, Egbert clay, and Clear Lake clay.

Riparian Forest/Scrub

Riparian forest/scrub is not mapped as a separate community type; the term "riparian" is used as a modifier for habitats generally classified as stream and freshwater marsh wetland because of their dominant hydrology and vegetation. These habitats, however, also support individual trees and patches of hydrophytic woody vegetation that can be characterized as riparian. Riparian tree species that characterize riparian habitat in the project area include Fremont's cottonwood, narrow-leaved willow, yellow willow, red willow, box elder, and Oregon ash. Herbaceous species in the understory include tule, Baltic rush, curly dock, creeping wildrye, Italian ryegrass, perennial pepperweed, poison oak, and annual sunflower. Willow scrub is dominated by small willow trees, primarily narrow-leaved willow.

3.17.4 Impacts

Approach and Methodology

The effects of the proposed action on wetlands and other waters of the United States were assessed based on a review of the engineering plans, and impact mechanisms and assumptions discussed in the following sections.

Impact Mechanisms

Wetland resources could be directly or indirectly affected by construction of the proposed action. The following types of activities could cause varying degrees of impacts on these resources.

- Vegetation removal, grading, and paving activities during road construction.
- Temporary stockpiling and sidecasting of soil, construction materials, or other construction wastes.
- Soil compaction, dust, and water runoff from the construction site into adjacent areas.

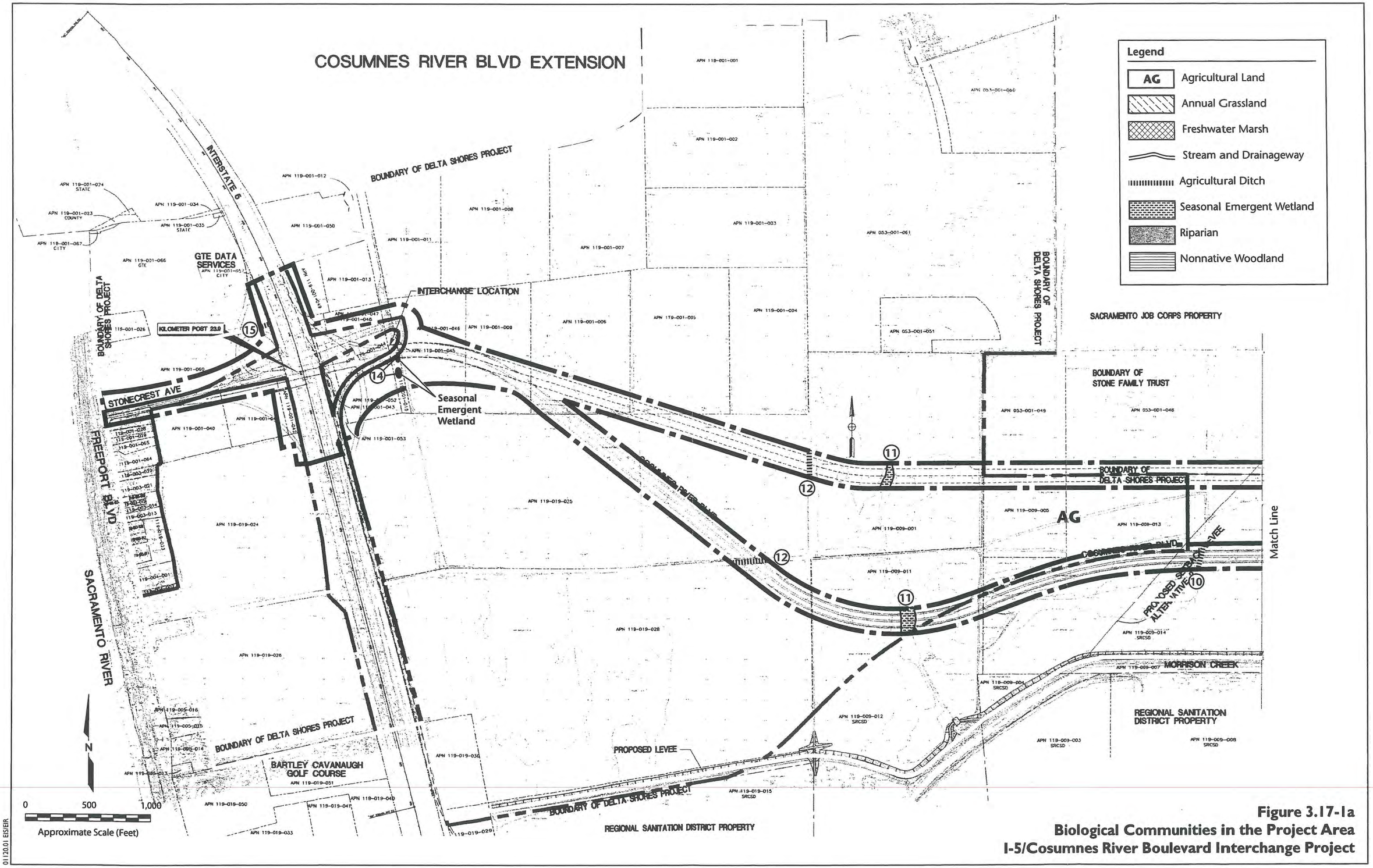

Figure 3.17-1a
Biological Communities in the Project Area
I-5/Cosumnes River Boulevard Interchange Project

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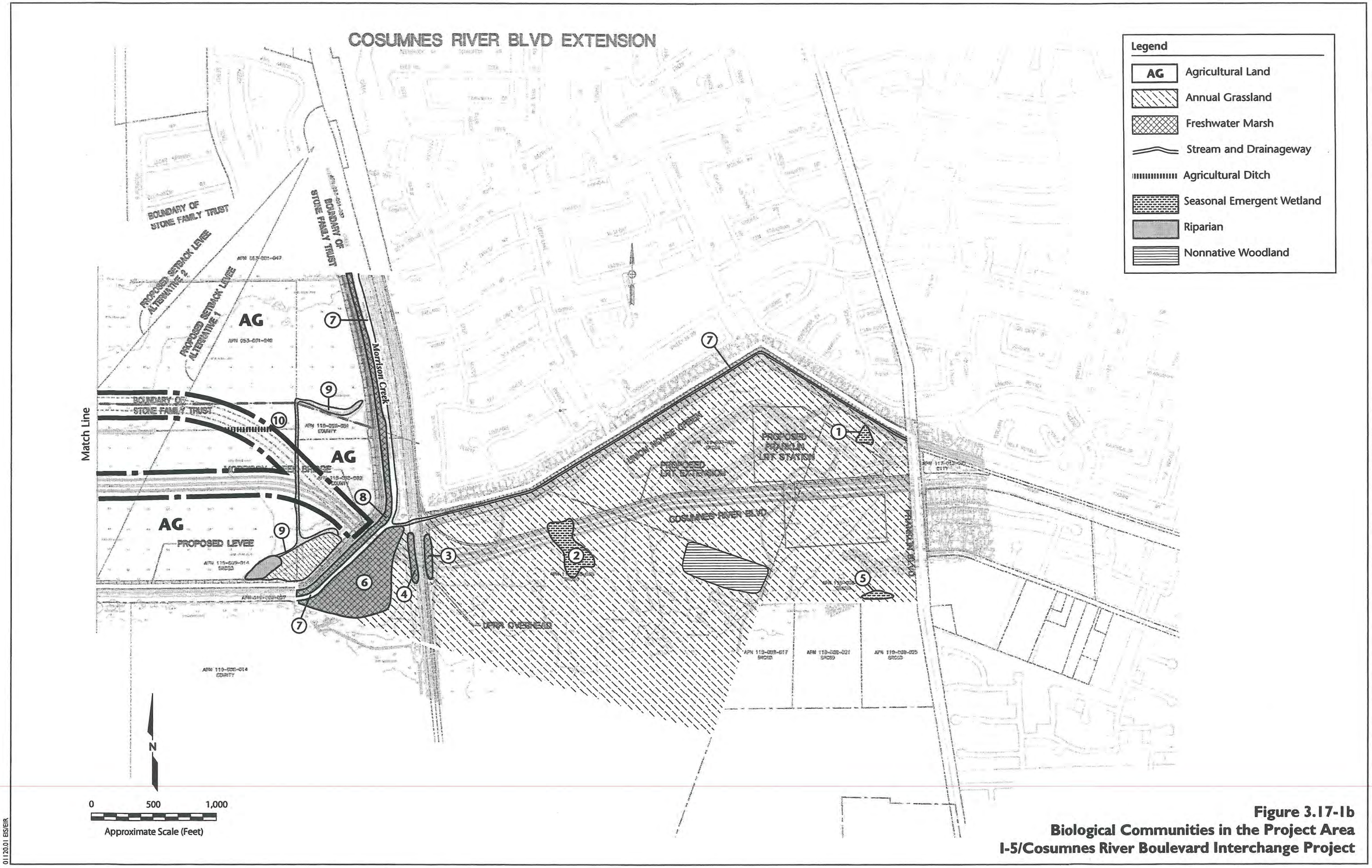


Figure 3.17-1b
Biological Communities in the Project Area
I-5/Cosumnes River Boulevard Interchange Project

01120.01 EIS/EIR

- Introduction of invasive nonnative species in construction areas that could displace native plant species in adjacent open space areas in the SRCSD Bufferlands.
- Construction activities in wetlands that contain ponded or flowing water and saturated soils.
- Runoff of herbicides, fertilizers, diesel, gasoline, oil, raw concrete, and other toxic materials used for road construction and maintenance into sensitive resource areas (e.g., wetlands, drainageways, and streams).

Impact Assumptions

In assessing the magnitude of possible impacts, the following project understandings and assumptions were made regarding project construction.

- The proposed action would result in temporary and permanent impacts on wetland resources in the project area. Temporary impacts occur only during the construction period, and would be within temporary equipment staging and equipment movement areas and any new temporary access roads. Permanent impacts include changes from vegetated to developed areas. The permanent impact areas include all areas within the project footprint that would not be revegetated and restored.
- Project impacts may be direct or indirect. Direct impacts would be within the project footprint or temporary construction areas. Indirect impacts would occur outside of the project footprint and construction area.
- Before construction begins, the City would obtain all necessary permits pertaining to affected waters of the United States. Grading or other construction activities within the drainageway would require an SAA from the DFG. Discharge of fill into waters of the United States associated with road and bridge construction would require a CWA Section 404 permit from the Corps and Section 401 certification from the Central Valley RWQCB. Grading would require a CWA Section 402 permit and preparation of a SWPPP. The permitting process would also require compensation for construction impacts.
- Losses of common or artificial vegetation community types, including agriculture, ruderal, and landscaping, would not be considered adverse.

Build Alternative A: Franklin to Freeport North Alignment

Impact WTL-1: Permanent Direct Loss of Seasonal Emergent Wetland

Permanent impacts due to construction of this alternative would include the direct loss of seasonal emergent wetland in wetland features 2 and 11. Refer to Table 3.17-1 for specific acreages of impact.

With implementation of the water quality environmental commitments (see Chapter 2, Section 3.22.3), indirect impacts due to construction within seasonal emergent wetland features 2 and 11 are not anticipated. Construction activities would be limited to the roadway footprint. Both wetlands would be placed in culverts at the road crossing to allow flow to move beneath the roadbed. The culverts would be adequately sized to not restrict flow, and to maintain the upstream and downstream wetland functions. Construction would occur during the dry season. No soil would be sidecast within the wetland boundaries. Sedimentation could indirectly affect adjacent portions of wetland features 2 and 11 as a result of soil that has been moved or

stockpiled within the construction area washing into wetland areas from the construction zone. This impact would be avoided by limiting construction to the dry season and by implementing erosion control measures in the SWPPP for the proposed action. Therefore, no indirect impacts on wetlands are anticipated.

Table 3.17-1. Impacts on Streams and Wetlands

Feature[b]	Type	Permanent Fill Impacts (Hectares [Acres])[a]		Permanent Shading Impacts (Hectares [Acres])
		Alternative A[c]	Alternative B[c]	
2	Seasonal emergent wetland	0.170 (0.42)	0.170 (0.42)	–
3	Freshwater marsh	0.004 (0.01)	0.004 (0.01)	0.03 (0.07)
4	Freshwater marsh	0.004 (0.01)	0.004 (0.01)	0.04 (0.09)
6	Freshwater marsh	0.016 (0.04)	0.016 (0.04)	0.21 (0.53)
7	Stream (Morrison Creek OHWM)	–	–	–
8	Freshwater marsh	0.004 (0.01)	0.004 (0.01)	0.04 (0.10)
9	Drainageway (freshwater marsh vegetation)	0.032 (0.08)	0.032 (0.08)	–
11	Seasonal emergent wetland	0.100 (0.24)	0.160 (0.40)	–
Total Impacts		**0.330 (0.81)**	**0.390 (0.97)**	**0.32 (0.79)**

[a] Impact areas are based on the preliminary delineation.
[b] Features identified on Figures 3.17-1a and 3.17-1b.
[c] Features 3, 4, 6, and 8 include only the impact area of column footprints.

Impact WTL-2: Permanent Direct Loss or Degradation of Freshwater Marsh

Implementation of this alternative would result in direct fill of freshwater marsh during construction of the proposed action and degradation of freshwater marsh because of shading by the bridge structure following construction. (Table 3.17-1). Impacts on freshwater marsh habitat would be minimized using the design of an overcrossing of Morrison Creek. The placement of fill would be minimized by placement of piers to support the above-grade roadway instead of using at-grade construction. The proposed action includes construction of a bridge structure spanning the UPRR line and Morrison Creek. The permanent impacts of the overcrossing include placement of columns within wetland features 3, 4, 6, and 8; fill within the OHWM of Morrison Creek would be avoided.

The current design of the bridge structure spanning Morrison Creek and the UPRR line is shown in Figure 2-5. As shown, a single structure would be constructed on columns to span both the creek and the railroad. The bridge would require six pier lines. Each pier line would include four columns, each supported by a footing that would cover a 13.4-m^2 (144-ft^2) area on the ground. A total of three pier lines (12 column footings) would be constructed in wetland features 3, 4, and 8 (one pier line or four columns per feature), and three pier lines (twelve column footings) would be constructed in wetland feature 6 (Table 3.17-1).

Construction of the column footings would occur during the dry season to minimize potential erosion and sedimentation impacts from equipment driving through the wetlands to the locations of each footing. In addition, soil excavated for construction of the column footings would not be sidecast within the wetland. All soil would be sidecast directly outside the wetland boundary or placed in a truck staged outside of the wetland. Therefore, the anticipated direct loss of wetland area from construction of the bridge structure would occur only from construction of the column footings.

Additional direct permanent impacts on freshwater marsh vegetation and riparian trees beneath the UPRR/Morrison Creek bridge would occur because of shading by the new bridge structure. The bridge would be approximately 30.5 m (100 ft) wide. It would rise approximately 8 m (26 ft) high over the UPRR line, 5.5 m (18 ft) high over the existing levee, and 10.3 to 12.8 m (34 to 42 ft) above the ground level in wetland features 3, 4, 6, and 8 (Figure 2-5). Most of the area beneath the bridge would be in permanent shade after construction, although the specific areas shaded would vary somewhat between seasons as the angle of the sun changes. The area on the north side would experience the greatest difference in light intensity. Shading would affect the continued growth and new establishment of freshwater marsh species and riparian trees in portions of wetland features 3, 4, 6, and 8. Existing wetland vegetation within the bridge footprint would thin and die out after construction, with scattered shade-tolerant, herbaceous emergent vegetation replacing it. Survival of woody vegetation would be unlikely. The wetland would become primarily an unvegetated other water of the United States that retains wetland hydrology and soils. This change in vegetation would alter the current function of the wetlands as wildlife habitat. For the purposes of this impact analysis, it is assumed that the entire area beneath the footprint of the bridge would be shaded and the existing wetland vegetation community would be lost or altered. The impact acreage is shown in Table 3.17-1 (above), and impacts on riparian trees are discussed further in Impact VEG-2. Mitigation has been identified for this effect (WTL-1 and WTL-2).

Impact WTL-3: Loss of Vegetated Drainageway

Construction of the proposed action would result in the direct fill of vegetated drainageway (Table 3.17-1). No fill would be placed within the OHWM of Morrison Creek. Construction within the approximately 6.8 meter (22.3 foot) wide drainageway feature 9 would be limited to the roadway footprint, which is approximately 47.5 m (156 ft) wide. The drainageway would be placed in a culvert to allow flow to move beneath the roadbed. Construction would occur during the dry season, and no soil will be sidecast within the wetland boundaries. Therefore, direct impacts within this wetland feature would include only the permanent fill areas.

Potential indirect impacts on portions of Morrison Creek adjacent to the construction area could occur because of sedimentation. Soil that has been moved or stockpiled within the construction area could be washed into the creek from the construction zone. This impact would be avoided by limiting construction to the dry season and by implementation of erosion control measures in the SWPPP for the proposed action. No indirect impacts on Morrison Creek are anticipated. Mitigation has been identified for this effect (WTL-1 and WTL-2) .

Build Alternative B: Franklin to Freeport South Alignment

Impacts WTL-2 and WTL-3 would be the same under this alternative as under Build Alternative A.

Impact WTL-1: Permanent Direct Loss of Seasonal Emergent Wetland

Construction of this alternative would result in the loss of seasonal emergent wetland in wetland feature 2 and wetland feature 11. Mitigation has been identified for this effect (WTL-1 and WTL-2).

No-Build Alternative (No Project)

Under this alternative, there would be no loss of seasonal emergent wetlands, freshwater marsh, or vegetated drainageway.

3.17.5 Avoidance, Minimization and Mitigation Measures

Mitigation Measure WTL-1: Avoid or Minimize Indirect Impacts on Wetlands

Orange construction barrier fencing will be installed to identify and help protect environmentally sensitive wetland areas. The construction specifications will require that a qualified biologist identify sensitive wetlands habitat onsite and identify areas to avoid during construction. The environmentally sensitive areas will be identified by a qualified biologist on the construction drawings before bid documents are released. The following paragraph will be included in the construction specifications:

> The Contractor's attention is directed to the areas designated as "Environmentally Sensitive Areas." These areas are protected, and no entry by the Contractor for any purpose will be allowed unless specifically authorized in writing by the City and Caltrans. The Contractor will take measures including giving written notice to employees and subcontractors to ensure that Contractor's forces do not enter or disturb these areas.

Temporary fences around the environmentally sensitive areas will be installed as the first order of work. Temporary fencing will be 1.2 m (4 ft) high, commercial-quality woven polypropylene, orange in color, and will be installed around the following sensitive biological resources to be avoided:

1. Delineated wetlands within 76.2 m (250 ft) of the construction area
2. Delineated wetlands in the construction area (to be placed at the edge of the 30.5-m-wide [100-ft-wide] construction zone)

This fencing will protect existing resources and prevent encroachment by construction vehicles and personnel. The exact location of the fencing will be determined by a qualified biologist with the goal of protecting sensitive wetland habitat. The fencing will be tightly strung on posts with a maximum 3-m (10-ft) spacing. The fencing will be installed in a manner that prevents any equipment from extending the work area unnecessarily beyond the area necessary to complete the work. Temporary fences will be furnished and constructed, inspected weekly, maintained, and later removed, as shown on the plans, as specified in the special provisions, and as directed by the project engineer. The contractor shall prohibit any storage, parking, or construction staging within 76.2 m (250 ft) of avoided delineated wetlands.

Mitigation Measure WTL-2: Compensate for Loss of Wetlands

The City will purchase mitigation credits from an approved mitigation bank to compensate for the direct loss of seasonal emergent wetland and freshwater marsh/drainageway habitat within the road footprint, and indirect loss of freshwater marsh habitat within the bridge footprint. Compensation for the riparian component of these wetlands will include onsite tree planting (refer to section 3.18, "Vegetation").

Seasonal emergent wetland feature 2, freshwater marsh wetland features 3, 4, 6, and 8 , and drainageway feature 9 are minimally disturbed, relatively high functioning wetlands and will be mitigated at a 2:1 ratio. Seasonal emergent wetland feature 11 is located within actively cultivated agricultural land, supports minimal vegetation, and is subject to plowing on a regular basis. Because of the lower habitat value of wetland feature 11, it will be mitigated at a 1:1 ratio. Mitigation costs are estimated at approximately $20,000 per acre at an approved mitigation bank. Based on the ratios described above and the impacts identified in Table 3.17-1, the cost of mitigation would range from approximately $30,000 to $35,000.

3.17.6 Cumulative Impacts

Impact WTL-4: Cumulative Loss of Seasonal Emergent Wetland, Freshwater Marsh, Drainageways

Implementation of the proposed action, in combination with other local and regional projects, would contribute to the cumulative loss of seasonal emergent wetland, freshwater marsh, drainageways in the project vicinity. Mitigation has been identified for this effect (WTL-1 and WTL-2).

3.18 Vegetation

The information below is summarized from the project natural environment study (NES) (Jones & Stokes 2003g) and on updated design information provided by the City's design consultant. The NES report is available for public review at City offices. This section addresses habitats and vegetative communities, trees, and invasive species.

3.18.1 Regulatory Setting

Federal Requirements

Executive Order 13112: Prevention and Control of Invasive Species

EO 13112, signed February 3, 1999, directs all federal agencies to prevent and control introductions of invasive species in a cost-effective and environmentally sound manner. It established a National Invasive Species Council (NISC) composed of federal agencies and departments and a supporting Invasive Species Advisory Committee (ISAC) composed of state, local, and private entities. NISC and ISAC prepared a national invasive species management plan (2001) that recommends objectives and measures to implement the EO and to prevent the introduction and spread of invasive species. The EO and directives from FHWA require consideration of invasive species in NEPA analyses, including their identification and distribution, their potential impacts, and measures to prevent or eradicate them.

State Requirements

California Native Plant Protection Act

California's Native Plant Protection Act (NPPA) (California Fish and Game Code Sections 1900 to 1913) requires all state agencies to use their authority to carry out programs to conserve endangered and rare native plants. Provisions of the NPPA prohibit the taking of listed plants from the wild and require notification of DFG at least 10 days in advance of any change in land use. This allows DFG to salvage listed plant species that would otherwise be destroyed. The applicant is required to conduct botanical inventories and consult with DFG during project planning to comply with the provisions of this act and sections of CEQA that apply to rare or endangered plants.

Local Requirements

City of Sacramento Heritage Tree Ordinance

The City Heritage Tree Ordinance (City of Sacramento Municipal Code, Title 12, Chapter 12.64) defines a "heritage tree" as any of the following.

> Any tree or any species with a truck circumference of one hundred (100) inches or more, which is of good quality in terms of health, vigor of growth and conformity to generally accepted horticultural standards of shape and location for its species.
>
> Any native *Quercus* species, *Aesculus California* or *Platanus racemosa*, having a circumference of thirty six (36) inches or greater when a single trunk, or a cumulative circumference of thirty-six (36) inches or greater when a multi-trunk.

> Any tree thirty-six (36) inches in circumference or greater in a riparian zone. The riparian zone is measured from the center line of the watercourse to thirty (30) feet beyond the high water line.
>
> Any tree, grove of trees or woodland trees designated by resolution of the city council to be of special historical or environmental value or of significant community benefit.

The ordinance states that, during construction activity on any property on which a heritage tree is located, unless the express written permission of the director is first obtained, no person shall:

> Change the amount of irrigation provided to any heritage tree from that which was provided prior to the commencement of construction activity.
>
> Trench, grade, or pave into the dripline area of a heritage tree, or trim roots.
>
> Change, by more than two feet, grade elevations within thirty (30) feet of the dripline area of a heritage tree.
>
> Park or operate any motor vehicle within the dripline area of any heritage tree.
>
> Place or store any equipment or construction materials within the dripline area of any heritage tree.
>
> Attach any signs, ropes, cables or any other items to any heritage tree.
>
> Cut or trim any branch of a heritage tree for temporary construction purposes.
>
> Place or allow to flow into or over the dripline area of any heritage tree any oil, fuel, concrete mix or other deleterious substance.

Sacramento County Tree Preservation Ordinance

The County Tree Preservation Ordinance (Sacramento County Code, Chapter 19.12) defines a tree as the following.

> Any living native oak tree having at least one trunk of six inches or more in diameter measured four and one-half (4½) feet above the ground, or a multi-trunked native oak tree having an aggregate diameter of ten inches or more, measured four and one-half (4½) feet above the ground (dbh).

The ordinance states that a tree permit or authorization as a condition of a discretionary project is required for anyone to trench, grade, or fill within the dripline of a tree protected under the ordinance. An application for a permit must include a description of the reasons for removal and consent of the landowner and a tree survey that records the location, number, species, diameter at breast height (dbh), approximate height, approximate canopy cover diameter, and approximate age of each tree proposed for removal. Permit procedures require submittal of a permit application to the County Director of Public Works no fewer than 10 days before the scheduled removal.

3.18.2 Affected Environment

Survey Methods

Jones & Stokes botanists conducted field visits to map vegetation communities on April 16 to 18, August 29, November 7, and December 5 and 6, 2001, and January 4 and February 20, 2002. A complete list of plant species observed in the project area is included in Appendix C. There are no endangered or rare native plant species on the project site.

A national invasive weed list has not yet been approved by the NISC, but FHWA requires that state departments of transportation use the state's noxious weed list (California Department of Food and Agriculture 2000) in the interim. Because FHWA has not yet developed a list of invasive species to be considered in the analysis of transportation projects, California Department of Food and Agriculture (CDFA) and California Exotic Pest Plant Council (Cal-EPPC) lists were used to analyze invasive species at the project site. The County is currently developing an invasive species list, but it is not yet available (Nyvall 2002).

Survey Results

The project area is located in the Sacramento Valley geographic subdivision of the Great Central Valley (Hickman 1993). The project area's topography is level, with elevations ranging from less than 0.3 to 6.1 m (less than 1 to 20 ft) above sea level. Approximately 17.0 in of precipitation fall in the project vicinity annually (U.S. Soil Conservation Service 1993). A topographic map of the project area is provided in Figure 1-3.

The project area supports both important and common natural community types. Important natural communities are habitats that are considered sensitive because of high species diversity, high productivity, unusual nature, limited distribution, or declining status, or a combination of these qualities. Local, state, and federal agencies consider these habitats important. The California Natural Diversity Database (CNDDB) contains a current list of rare (i.e., important) natural communities throughout the state. USFWS considers certain habitats, such as wetlands and riparian communities, important to wildlife. The Corps and EPA consider wetland habitats to be important for water quality and wildlife. The habitats in the project area that meet the criteria for important natural communities are wetlands and are discussed further in section 3.17, "Wetlands and Other Waters of the United States," and section 3.19, "Wildlife."

Common natural communities are habitats that have low species diversity, are widespread, reestablish naturally following disturbance, or support primarily nonnative species. These communities are not generally protected by agencies unless the specific site is habitat for or supports special-status species (e.g., raptor foraging or nesting habitat, upland habitat within a wetland watershed). Common natural communities in the project area are listed below.

- Agricultural land (includes ruderal)
- Annual grassland
- Nonnative woodland
- Agricultural ditch

Developed areas are also found in the project area, including roads, a railroad, buildings, and minor amounts of landscaped or ruderal vegetation surrounding these features.

The scientific names of plant species encountered in the project area are contained in Appendix C.

Agricultural Land

Actively cultivated agricultural land supporting grain crops occupies most of the project area west of Morrison Creek. Natural vegetation typically is minimal and weedy, and usually occurs only on the fringe of agricultural fields, where it is subject to frequent disturbance.

Annual Grassland

Annual grassland is present in the project area, primarily east of Morrison Creek and south of Union House Creek. Annual grassland consists of dense to sparse covers of nonnative annual grasses that often grow with a variety of showy annual forbs (native and nonnative). Germination occurs with the onset of the late fall rains; growth, flowering, and seed-set occur from winter through spring; and plants are typically senescent through the summer and fall dry season (Holland 1986). Common plant species include wild oats, bromes, fescue, barbed goatgrass, Italian ryegrass, mustards, filarees, yellow star-thistle, California poppy, and lupines.

The SRCSD Bufferlands has been working with SAFCA to develop a combination flood control, recreation, and habitat enhancement and restoration project as part of the South Sacramento Streams Project, which would entail habitat enhancement and restoration on approximately 161.9 ha (400 ac) on the SRCSD Bufferlands, including a small portion (less than 0.4 ha [1 ac]) of annual grassland within project area. The annual grassland to be enhanced is located between wetland features 4 and 6 as indicated on Figure 3.17-1b. SRCSD Bufferlands habitat enhancement in this area would consist of plantings with herbaceous vegetation and native grasses suitable for upland habitat. According to Bryan Young, installation of plantings is anticipated to begin in fall 2004 (Young pers. comm.).

Nonnative Woodland

An area of nonnative woodland is located in the project area east of Morrison Creek. It is composed of eucalyptus, pine, and several other nonnative trees planted in rows. The understory is annual grassland.

Agricultural Ditches

The agricultural ditches in the project area are wetland features 10, 12, and 15 (Figures 3.17-1a and 3.17-1b). The ditches are U- or V-shaped and often vegetated with plant species typically associated with creek channels, such as willow, rabbitsfoot grass, cattail, smartweed, and upland grass species. For agricultural ditches, the only water source comes from agricultural practices.

Ruderal Vegetation

An undetermined amount of ruderal vegetation is located in portions of the project area that are disturbed frequently, such as roadsides and frequently plowed land. These areas are not mapped separately from the associated developed or agricultural cover types. Ruderal vegetation consists of a sparse to dense cover of weedy plant species. Common plant species are wild oats, bromes, fescue, ryegrass, mustards, filarees, and yellow star-thistle.

Protected Trees

Approximately 50 to 100 small interior live oak and valley oak trees are located within annual grassland near Franklin Boulevard at the proposed extension of Cosumnes River Boulevard. These trees were planted in 1995 as part of the Trail of Trees in the SRCSD Bufferlands. At the time of field work (2001 to 2002), they ranged from approximately 5 to 10 cm (2 to 4 in) dbh. The trees are located on the Bufferlands and compensation and mitigation for any project-related effects on these trees would be need to be coordinated with the SRCSD Bufferlands.

Riparian cottonwood and willow trees are located near Morrison Creek, in freshwater marsh habitat on both sides of the UPRR line, and along drainageway feature 9. Some of these trees meet the criteria for riparian trees protected under the City's tree ordinance. The city would review effects on riparian trees.

A row of large elm trees, called Victory Trees, was planted along Freeport Boulevard almost as far south as Stonecrest Avenue (post mile [PM] 35.04) and 15 m (50 ft) east and west of the roadway in memory of World War I veterans. The trees nearest the project area were removed in 2002 because of infestation by Dutch elm disease. The trees along the east side of Freeport Boulevard and north side of Stonecrest Avenue are within Sacramento. Trees on the west side of Freeport and south of Stonecrest Avenue are on Sacramento County land.

Noxious Weeds

Roads, highways, and related construction projects are some of the principal dispersal vectors for exotic pest plants. The introduction and spread of exotic pest plants adversely affect natural plant communities by displacing native plant species that provide shelter and forage for wildlife species. Exotic pest plants include species designated as federal noxious weeds by the U.S. Department of Agriculture, species listed by CDFA, and other exotic pest plants designated by Cal-EPPC.

Table 3.18-1 identifies the invasive species from these lists found at the project site. The County agricultural commissioner has not yet identified control measures for any of these species. The infestation of the project area by these species is limited, occurring primarily at the perimeter of agricultural fields or scattered in the annual grassland.

Table 3.18-1. Noxious Weeds Located on the Project Site

Common Species Names	Scientific Species Names	CDFG	Cal-EPPC
Black mustard	*Brassica nigra*	–	B
Yellow star-thistle	*Centaurea solstitialis*	C	A-1
Field bindweed	*Convolvulus arvensis*	C	–
Bermuda grass	*Cynodon dactylon*	C	–
Sweet fennel	*Foeniculum vulgare*	–	A-1
Perennial peppergrass	*Lepidium latifolium*	B	A-1
Alkali mallow	*Malvella leprosa*	C	–
Pennyroyal	*Mentha pulegium*	–	A-2
Water smartweed	*Polygonum arenastrum*	C	–
Himalayan blackberry	*Rubus discolor*	–	A-1
Johnsongrass	*Sorghum halapense*	C	–
Medusa-head	*Taeniatherum caput-medusae*	C	A-1
Vinegar weed	*Trichostemma lanceolatum*	C	–

Notes: CDFA and CEPPC lists assign ratings to each of the species on their lists. These ratings reflect CDFA and CEPPC views of the statewide importance of the pest, the likelihood that eradication or control efforts would be successful, and the present distribution of the pest in the state. These ratings are guidelines that indicate the most appropriate action to take against a pest under general circumstances. The County Agricultural Commissioner does not currently have a list of invasive species on which action will be taken.

CDFA categories are defined as follows:
B = eradication, containment, control, or other holding action at the discretion of the commissioner.
C = state-endorsed holding action and eradication only when found in a nursery; action to retard spread outside of nurseries at the discretion of the commissioner; reject only when found in a cropseed for planting or at the discretion of the commissioner.

Cal-EPPC categories are defined as follows:
A-1 = widespread pest plants that are aggressive and displace native plants and natural habitats.
A-2 = regional pest plants that are aggressive and displace native plants and natural habitats.

3.18.3 Impacts

Approach and Methodology

The effects of the proposed action on vegetation were assessed based on a review of the engineering plans, and the impact mechanisms and assumptions discussed in the following sections.

Impact Mechanisms

The following types of activities could cause varying degrees of impacts on vegetation.

- Removal, grading, and paving activities during road construction.
- Introduction of invasive nonnative species in construction areas that could displace native plant species in adjacent open space areas in the SRCSD Bufferlands.

Impact Analysis Assumptions

In assessing the magnitude of possible impacts, the following project understandings and assumptions were made regarding project construction.

- The proposed action would result in temporary and permanent impacts on vegetation in the project area. Temporary impacts occur only during the construction period, and would be within temporary equipment staging and equipment movement areas and any new temporary access roads. Permanent impacts include changes from vegetated to developed areas. The

permanent impact areas would include all areas within the project footprint that would not be revegetated or restored.

- Project impacts may be direct or indirect. Direct impacts would be within the project footprint or temporary construction areas. Indirect impacts would occur outside of the project footprint and construction area.
- Losses of common or artificial vegetation community types, including agriculture, ruderal, and landscaping, would not be considered adverse.

Build Alternative A: Franklin to Freeport North Alignment

Impact VEG-1: Introduction or Spread of Noxious Weeds

Construction activities associated with this alternative, including land clearing and grading, could result in the introduction or spread of noxious weed species. These noxious weeds could displace native species, thereby changing the diversity of species or number of any species of plants. Soil-disturbing activities during construction could promote the introduction of plant species that are not currently found in the project area, including noxious weeds. Construction activities could also spread noxious weed species that already occur in the project area.

The introduction or spread of noxious weed species could result in habitat modification and affect sensitive natural communities in nearby open space. Mitigation has been identified for this effect (VEG-1).

Impact VEG-2: Loss of Protected Trees

Implementation of this alternative would result in the disturbance or removal of mature cottonwood and willow trees measuring 91 cm (36 in) or more in circumference. Construction of the Morrison Creek/UPRR bridge would remove up to 10 mature willows and six mature cottonwoods, and may shade smaller trees after construction is complete. Affected trees would include two cottonwoods in seasonal wetland feature 2; willows and cottonwoods in freshwater marsh features 3, 4, and 6; one or two cottonwoods in drainageway feature 9; and one or two cottonwoods in agricultural ditch feature 12. Project construction would directly remove or injure the trees located within the proposed road footprint.

The City Heritage Tree Ordinance protects native oaks measuring 91 cm (36 in) or more in circumference. If the proposed action is not constructed for several years, the native oak trees located west of Franklin Boulevard in the Trail of Trees at the SRCSD Bufferlands could become large enough to be protected under this ordinance. As noted above, however, the City reviews effects on smaller native oaks and may require mitigation by planting replacement trees (Pskowski 2002). Some of these trees would be within the project area and would be removed or damaged during construction.

The City Heritage Tree Ordinance additionally protects all trees measuring 91 cm (36 in) or greater in circumference in a riparian zone. The loss of mature willow and cottonwood trees would therefore also result in a loss of locally protected trees. The loss of or damage to trees near Morrison Creek would adversely affect riparian vegetation and would potentially adversely affect raptor nests (see discussion in section 3.19, "Wildlife").

The loss of native oaks and up to 16 mature riparian trees would conflict with local ordinances protecting native oak and riparian trees. Mitigation has been identified for this effect (VEG-2 and VEG-3)

Build Alternative B: Franklin to Freeport South Alignment

The impacts under this alternative would be the same as those described for Build Alternative A.

No-Build Alternative (No Project)

Under this alternative, there would be no loss of agricultural land, annual grasslands, or protected trees, and no introduction or spread of noxious weeds.

3.18.4 Avoidance, Minimization and Mitigation Measures

Mitigation Measure VEG-1: Prevent the Introduction or Spread of Noxious Weeds

The contractor will be responsible for avoiding the introduction of new noxious weeds and the spread of weeds previously documented at the project site. Accordingly, the following measures will be implemented during construction.

1. Educate construction supervisors and managers on weed identification and the importance of controlling and preventing the spread of noxious weed infestations.
2. Minimize surface disturbance to the greatest extent possible.
3. Seed all disturbed areas with certified weed-free native and nonnative mixes, as provided in the revegetation plan developed in cooperation with DFG. Mulch with certified weed-free mulch. Rice straw may be used to mulch upland areas.
4. Clean equipment before entering or exiting the project area.
5. Use native, noninvasive species or nonpersistent hybrids in erosion control plantings to stabilize site conditions and prevent invasive species from colonizing.
6. Provide all seed mixes to be used on SRCSD property to SRCSD Bufferlands staff for review and approval prior to use.

Mitigation Measure VEG-2: Protect Trees to Be Avoided by Construction

Prior to construction, the City will ensure that a certified arborist shall identify and map trees to be saved and this information shall be provided to the contractor to ensure that trees to be saved are not harmed. Before any ground-disturbing activity, the contractor will be required to install a minimum 1.2-m-tall (4-ft-tall) commercial-quality woven orange polypropylene construction fence around the driplines of oak trees and riparian vegetation in the construction area. This fencing will protect existing resources and prevent encroachment by construction vehicles and personnel. The exact location of the fencing will be determined by a qualified biologist with the goal of protecting sensitive biological resources. The fencing will be strung tightly on posts with a maximum 3-m (10-ft) spacing. The fencing will be installed in a manner that prevents any equipment from extending the work area unnecessarily beyond the area necessary to complete the work. The fencing will be checked and maintained weekly until all construction is completed.

Mitigation Measure VEG-3: Compensate for Loss of Protected Trees

Removal of mature native riparian trees, which include willows or cottonwoods that measure 15.2 cm (6 in) dbh or more, will be avoided near Morrison Creek to the maximum extent possible. The City will compensate for the loss of mature native trees removed for construction or shaded as a result of the overpass construction at a 1:1 ratio of dbh (one inch of dbh planted for each inch of dbh removed). A planting plan prepared by a licensed landscape architect who has experience with riparian plantings in the Sacramento area will be required. Replacement trees will be of the same species as those removed and will be planted as close to the original location of the removed trees as feasible. The City will monitor the planted trees annually for 5 years, with a goal of 80% survival. If fewer than 80% of the replacement trees have survived at the end of the 5-year monitoring period, replanting and an additional 5 years of monitoring will be conducted.

Before project construction begins, the City will provide a qualified botanist or arborist to survey the affected oak trees in the Trail of Trees west of Franklin Boulevard to record an accurate location, species, size (dbh), and canopy diameter. This information will be submitted to the City Tree Services Department for review. Replacements are generally required on an inch-for-inch diameter basis (Pskowski 2002). The City will mitigate for removal of protected trees by transplanting the trees or planting oak trees on an inch-for-inch replacement basis near the original location in the Trail of Trees. Grading within the driplines of protected trees will be avoided wherever feasible. If grading must occur within the driplines of protected trees, replanting mitigation for these indirectly affected trees will be the same as that for removed trees (i.e., replacement based on an equal number of inches of dbh will be planted near the original location). Monitoring requirements will be for 5 years as described above for native riparian trees.

3.18.5 Cumulative Impacts

Impact VEG-3: Cumulative Loss of Protected Trees and the Spread of Noxious Weeds in the Project Vicinity

Implementation of the proposed action in combination with other local and regional projects could contribute to the cumulative loss of protected trees and the spread of noxious weeds in the project vicinity. Mitigation has been identified for this effect (VEG-1 to VEG-3).

3.19 Wildlife

The information below is based on the NES (Jones & Stokes 2003g) and on updated design information provided by the City's engineering consultant. The NES report is available for public review at City offices. This section addresses common wildlife species in the project area. Wildlife species protected under the state and federal Endangered Species Acts, including listed vernal pool invertebrates, valley elderberry longhorn beetle, and other threatened and endangered species are not addressed in this section, and are discussed in section 3.20, "Threatened and Endangered Species."

3.19.1 Regulatory Setting

Federal Requirements

Executive Order 13186: Migratory Bird Treaty Act

EO 13186, signed January 10, 2001, directs each federal agency taking actions that will have or are likely to have a negative impact on migratory bird populations to work with USFWS to develop a Memorandum of Understanding (MOU) to promote the conservation of migratory bird populations. Protocols developed under the MOU will include the following agency responsibilities.

- Avoid and minimize, to the extent practicable, adverse impacts on migratory bird resources when conducting agency actions.
- Restore and enhance habitat of migratory birds, as practicable.
- Prevent or abate the pollution or detrimental alteration of the environment for the benefit of migratory birds, as practicable.

The EO is designed to assist federal agencies in their efforts to comply with the Migratory Bird Treaty Act (MTBA) (50 CFR 10 and 21) and does not constitute any legal authorization to take migratory birds. Take, under the MBTA, is defined as the action of or attempt to pursue, hunt, shoot, capture, collect, or kill (50 CFR 10.12) and includes intentional take (i.e., take that is the purpose of the activity in question) and unintentional take (i.e., take that results from, but is not the purpose of, the activity in question).

State Requirements

California Fish and Game Code

California Fish and Game Code Sections 1600 et seq. are described under section 3.17, "Wetlands and Other Waters of the United States." Under Sections 3503 and 3503.5, it is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, or to take, possess, or destroy any birds-of-prey or their nest or eggs.

Local Requirements

Sacramento County General Plan Policies

The Sacramento County General Plan Conservation Element contains policies to protect and expand marsh and riparian woodland habitats, vernal pools, and wetlands (Sacramento County 1993a).

City of Sacramento General Plan Policies

The City of Sacramento General Plan (City of Sacramento 1988, as amended through 2000) contains measures to retain the riparian woodlands and grassland vegetation along the waterways and floodways of North Natomas and South Sacramento.

3.19.2 Affected Environment

Survey Methods

A Jones & Stokes wildlife biologist conducted reconnaissance-level field surveys of the study area on April 7 and November 7, 2001, to assess habitat suitability for sensitive wildlife species. On December 5, 2001, two Jones & Stokes wildlife biologists conducted a habitat assessment of the project site for suitability for western burrowing owls. On January 10, 2002, a Jones & Stokes wildlife biologist conducted an overall study area habitat assessment. On February 1, 2002, a Jones & Stokes wildlife biologist conducted elderberry shrub surveys to assess impacts on the valley elderberry longhorn beetle (VELB). A Jones & Stokes invertebrate ecologist conducted special-status shrimp sampling surveys on October 29, 2001, began protocol-level wet-season surveys for special-status fairy shrimp and tadpole shrimp when the pools became inundated on December 3, 2001, and continued conducting surveys every 2 weeks until the pools were dry on April 8, 2002. The results of elderberry shrub and special-status invertebrate surveys are discussed in section 3.20, "Threatened and Endangered Species."

A Jones & Stokes fisheries biologist determined effects on fisheries resources based on general knowledge of the area, the condition of the stream habitat, Jones & Stokes file data, and the description of the resources in Morrison Creek from the South Sacramento County Streams Investigation Final EIS/EIR (U.S. Army Corps of Engineers 1998). Morrison Creek does not support any anadromous fisheries, but may support native fish species, such as Sacramento blackfish, which has been recorded by Bufferlands staff (Young pers. comm.). Within the project area, the creek is highly channelized with little cover, experiences low flows and high water temperatures, and is subjected to urban and agricultural runoff.

Survey Results

The topography of the project area is described in section 3.18, "Vegetation." The project area supports both important and common natural community types. The habitats in the project area that meet the criteria for important natural communities are wetlands and are discussed further in section 3.17, "Wetlands and Other Waters of the United States," and this section. Common natural communities are described in section 3.18, "Vegetation." The important and common natural communities in the study area that may provide habitat for common wildlife species are listed below.

- Seasonal emergent wetland
- Freshwater marsh (includes riparian forest/scrub)
- Stream and drainageway (includes riparian forest/scrub)
- Agricultural land (includes ruderal)
- Annual grassland
- Nonnative woodland

- Agricultural ditch

Developed areas are also found in the project area, including roads, a railroad, buildings, and minor amounts of landscaped or ruderal vegetation surrounding these features.

The wildlife characteristics of the important and common natural communities in the project area are discussed below. The scientific names of wildlife species encountered in the project area are contained in Appendix D.

Seasonal Emergent Wetland

Seasonal emergent wetland supports a variety of invertebrates and amphibians, such as vernal pool fairy shrimp, western toad, Pacific tree frog, and western terrestrial garter snake. These species, in turn, provide food for many other wildlife species, such as great blue heron, great egret, mallard, cinnamon teal, American avocet, killdeer, greater yellowlegs, and western sandpiper. Large wetlands also provide brood water for nesting waterfowl.

Freshwater Marsh

Freshwater marsh is a productive wildlife habitat. It provides food, cover, and water for many species of amphibians, reptiles, birds, and mammals, including special-status species. Pacific tree frogs, western toads, western pond turtles, common garter snakes, beavers, raccoons, river otter, mink, and muskrats use freshwater marsh for foraging or rearing. Mallards, wood ducks, red-winged blackbird, tri-colored blackbird, common yellowthroat, marsh wren, and song sparrows also use freshwater marsh. Freshwater marsh and the associated riparian trees are productive wildlife foraging and breeding habitat. A pair of white-tailed kites, a state fully protected species, occupied a nest tree in wetland feature 4 (Figure 3.17-1) during the 2001 breeding season.

Stream and Drainageway

Streams and drainageways provide habitat for many aquatic and semi-aquatic reptiles, birds, and mammals. Giant garter snake, a federally and state-listed threatened species, often uses streams and drainageways for dispersal and uses the banks of streams for foraging, basking, and hibernating. Other species associated with streams and their banks include common garter snakes, western pond turtles, waterfowl, great egrets, great blue herons, muskrats, raccoons, and beavers.

Riparian Forest/Scrub

Diverse and well-developed riparian habitat provides high-value habitat for many wildlife species, including special-status species. Invertebrates, amphibians, and aquatic reptiles live in aquatic and adjacent upland habitats. Raptors, herons, egrets, and other birds nest in the upper canopy. A variety of songbirds use the shrub canopy, and cavity-nesting birds, such as Nuttall's woodpecker and oak titmouse, occupy dying trees and snags. Raccoons, muskrats, and striped skunks are common in riparian habitats. Brush rabbits, California voles, and other small mammals are also common.

Agricultural Land

Agricultural land is established on fertile soils that historically supported an abundance of wildlife. The diversity of wildlife greatly diminishes when row crops are planted. However, agricultural land continues to provide important nesting and foraging habitat for many species of

birds and mammals during the breeding season, as well as important roosting and foraging habitat for wintering raptors, waterfowl, and other waterbirds during the nonbreeding season. The understory consists of low-growing grasses, or it is sprayed with herbicides to prevent the growth of herbaceous vegetation. Many species of rodents and birds have adapted to agricultural land but are controlled by fencing, trapping, and poisoning to prevent excessive crop losses (California Department of Food and Agriculture 1997). Wildlife species associated with agricultural land include mourning dove, American crow, Brewer's blackbird, greater sandhill crane, long-billed curlew, northern harrier, Swainson's hawk, white-tailed kite, red-tail hawk, western burrowing owl, egrets and other waterbirds, waterfowl, and many species of rodents (Mayer and Laudenslayer 1988).

Annual Grassland

Annual grassland is used by many wildlife species for foraging. Some of these species breed in annual grassland if special habitat features, such as ponds or woody plants, are available for breeding, resting, or escape cover (Mayer and Laudenslayer 1988). Reptiles that breed in annual grassland include western fence lizard, common garter snake, and western rattlesnake (Basey and Sinclear 1980). Annual grassland is foraging habitat for wide-ranging species such as red-tailed hawk, turkey vulture, and northern harrier, which also nest in annual grassland habitats (Mayer and Laudenslayer 1988). Mammals typically found in this habitat include California vole, western harvest mouse, California ground squirrel, black-tailed hare, coyote, and American badger (White et al. 1980). In addition, many species that nest or roost in adjacent woodland habitats (e.g., riparian, remnant oak woodlands), including western bluebird, western kingbird, and some species of bats, may forage in annual grassland.

Nonnative Woodland

Nonnative woodland can be used as nesting habitat by raptors, such as Swainson's hawk, white-tailed kite, and red-tailed hawk. Migratory birds often use nonnative woodland as roosting habitat.

Agricultural Ditches

Agricultural ditches provide low- to high-quality habitat for wildlife species, depending on the extent of vegetation. Ditches with little or no vegetation typically provide low-quality habitat and are occupied by aquatic insects and bullfrogs. Agricultural ditches with moderate to substantial amounts of wetland vegetation provide higher-quality habitat and are occupied by species such as great blue heron, great egret, mallard, Brewer's blackbird, black phoebe, and house sparrow. Agricultural ditches with emergent herbaceous wetland vegetation, such as cattails and bulrushes, provide suitable habitat for giant garter snake and western pond turtle.

Ruderal Vegetation

Because areas with ruderal vegetation typically are disturbed regularly by human activity, they typically provide lower-quality habitat for wildlife. However, these disturbed habitats can provide important nesting and foraging for some wildlife species. Wildlife species found commonly in such areas include western burrowing owl, western meadowlark, Brewer's blackbird, American goldfinch, white-crowned sparrow, yellow-billed magpie, mourning dove, Virginia opossum, and black-tailed hare. Also, American kestrels and red-tailed hawks frequently forage in this habitat.

3.19.3 Impacts

Approach and Methodology

The effects of the proposed action on wildlife were assessed based on a review of the engineering plans, and the impact mechanisms and assumptions discussed in the following sections.

Impact Mechanisms

Wildlife species could be directly or indirectly affected by construction of the project. The following types of activities could cause varying degrees of impacts on wildlife and their habitat in the project area.

- Vegetation removal, grading, and paving activities during road construction.
- Temporary stockpiling and sidecasting of soil, construction materials, or other construction wastes.
- Soil compaction, dust, and water runoff from the construction site into adjacent areas.
- Runoff of herbicides, fertilizers, diesel, gasoline, oil, raw concrete, and other toxic materials used for road construction and maintenance into sensitive resource areas (e.g., wetlands, drainageways, and streams).
- Vehicle impacts causing injury or death to wildlife species crossing the roadway.

Impact Analysis Assumptions

In assessing the magnitude of possible impacts, the following project understandings and assumptions were made regarding project construction.

- The proposed action would result in temporary and permanent impacts on wildlife resources in the project area. Temporary impacts occur only during the construction period, and would be within temporary equipment staging and equipment movement areas and any new temporary access roads. Permanent impacts include irreversible changes from vegetated to developed areas. The permanent impact areas would include all areas within the project footprint that are not revegetated or restored.
- Project impacts may be direct or indirect. Direct impacts would be within the project footprint or temporary construction areas. Indirect impacts would occur outside of the project footprint and construction area.

Build Alternative A: Franklin to Freeport North Alignment

Impact WLD-1: Disturbance of Nesting Migratory Birds, Including Raptors

Several non-special-status migratory birds, including raptors, could potentially nest in riparian forest and isolated trees throughout the study area as well as in annual grasslands. The occupied nests and eggs of these birds are protected by federal and state laws, including the MBTA and California Fish and Game Code Sections 3503 (active bird nests) and 3503.5 (active raptor nests). DFG is responsible for overseeing compliance with the codes and makes recommendations on nesting bird and raptor protection. Raptors such as red-tailed hawk, red-shouldered hawk, and great horned owl nest in riparian forest. Migratory birds such as American goldfinch, house wren, Bewick's wren, and black-throated hummingbird commonly nest in

riparian vegetation along Morrison Creek. Some raptors, such as northern harriers and western burrowing owls are ground nesting birds that nest in annual grasslands. The breeding season for these species is generally from February 1 to August 15. An active red-tailed hawk nest was observed within the project area during field surveys in April 2001. Other stick nests were observed in trees in the vicinity of the project area during the November and December 2001 and January 2002 field surveys. Implementation of this alternative would result in the possible loss of nesting birds, including raptors, if occupied nests are removed during the breeding season (generally between February 1 and August 15) or nesting birds are disturbed. This disturbance could cause death of young or loss of reproductive potential at active nests. Effects on nesting migratory birds and raptors would be considered adverse if the subsequent population declines were large and affected the viability of the local populations. The proposed action could affect up to 150 acres of grassland habitat and 12 mature cottonwood and up to 10 willow trees in riparian habitat at the project site. Grasslands provide nesting habitat for special-status birds, such as northern harriers and western burrowing owls, as well as non-special status birds, such as meadowlarks. Trees could provide nesting habitat for non-special-status migratory bird and raptor species, including American goldfinch, house wren, Bewick's wren, black-throated hummingbird, red-tailed hawk, red-shouldered hawk, and great-horned owl. These generally common species are locally and regionally abundant. Removal or disturbance of a small amount of nesting habitat for non-special-status migratory birds and raptors would not constitute an adverse impact. However, construction activities occurring at the project site during the breeding season that result in death of young or loss of reproductive potential would violate California Fish and Game Code Sections 3503 and 3503.5 and the MBTA. Mitigation has been identified for this effect (WLD-1).

Build Alternative B: Franklin to Freeport South Alignment

The impacts under this alternative would be the same as those described for Build Alternative A.

No-Build Alternative (No Project)

Under this alternative, there would be no adverse effects on wildlife species.

3.19.4 Avoidance, Minimization and Mitigation Measures

Mitigation Measure WLD-1: Avoid Impacts on Nesting Migratory Birds, Including Raptors

Because construction activities would occur during the breeding season for migratory birds and raptors (generally, February 1 through August 15), a qualified biologist will conduct a survey before the start of construction activities to determine whether active nests are present within 0.4 km (0.25 mi) of the project site. If an active nest is found in this area, the City will contact DFG to determine the need for a no-disturbance buffer or the need to monitor the nest. Removal of any nest trees is expressly prohibited.

If tree and shrub removal is required, removal should be conducted only outside the breeding season for migratory birds and raptors (generally, February 1 through August 15) (generally, trees can be removed from August 16 through January 31). If tree or shrub removal is required during the breeding season, the City will hire a qualified biologist before removal to conduct surveys for active migratory birds and raptor nests in the trees. If active migratory bird or raptor nests are found in the trees proposed for removal, the City will consult with USFWS and with

DFG before tree removal to develop an MOU to promote the conservation of migratory bird populations.

3.19.5 Cumulative Impacts

Impact WLD-2: Cumulative Loss of Nesting Migratory Birds

Implementation of the proposed action, in combination with other local and regional projects, could contribute to the cumulative loss of nesting migratory birds in the project vicinity. Mitigation has been identified for this effect (WLD-1).

3.20 Threatened and Endangered Species

The information below is summarized from the NES and Biological Assessment (BA) for the proposed action (Jones & Stokes 2003g, 2003c) and on updated design information provided by the City's engineering consultant. The NES and BA reports are available for public review at City offices. The BA addresses project effects on vernal pool fairy shrimp, vernal pool tadpole shrimp, VELB, and giant garter snake. This section addresses threatened and endangered botanical and wildlife species protected under the federal Endangered Species Act (ESA) and California Endangered Species Act (CESA). Common wildlife and vegetation species in the project area are discussed in sections 3.18, "Vegetation," and 3.19, "Wildlife."

3.20.1 Regulatory Setting

Federal Requirements

Federal Endangered Species Act

ESA, passed in 1973, and subsequent amendments provide for the conservation of endangered and threatened species and the ecosystems on which they depend. ESA Section 7 requires federal agencies, in consultation with and with the assistance of the Secretary of the Interior, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of threatened or endangered species or result in the destruction or adverse modification of habitat critical for these species. Regulations governing interagency cooperation under ESA Section 7 are found in 50 CFR 402. The U.S. Fish and Wildlife Service issued a Biological Opinion for the project on March 11, 2005 (Appendix E).

State Requirements

California Native Plant Protection Act

The NPPA is discussed in section 3.18, "Vegetation." There are no endangered or rare native plant species on the project site.

California Endangered Species Act

The California Endangered Species Act (CESA) (California Fish and Game Code Section 2080) prohibits the take of any endangered species or threatened species. Take is defined in California Fish and Game Code Section 86 as "hunt, pursue, catch, capture, or kill, or attempt to hunt pursue, catch, capture, or kill." DFG may authorize, by permit, the take of endangered species, threatened species, and candidate species if both of the following conditions are met: (1) the take is incidental to an otherwise lawful activity, and (2) the impacts of the authorized take shall be minimized and fully mitigated. The measures required to meet this obligation shall be roughly proportional in extent to the impact of the authorized taking on the species. Where various measures are available to meet this obligation, the measures required shall maintain the applicant's objectives to the greatest extent possible. All required measures shall be capable of successful implementation.

3.20.2 Affected Environment

Study Methods

A records search of DFG's CNDDB was conducted for the U.S. Geological Survey's (USGS's) Clarksburg, Florin, Sacramento West, Sacramento East, Carmichael, Elk Grove, Galt, Bruceville, and Courtland 7.5-minute quadrangles to determine whether any state or federal special-status species were known to occur in the vicinity of the project site (California Natural Diversity Database 2002). A target list of state and federal special-status species with potential to occur in the project area was compiled from the CNDDB search, a search of the California Native Plant Society's (CNPS's) Inventory of Rare and Endangered Plants of California (California Native Plant Society 2001), and a list of sensitive species provided by USFWS and the National Oceanic and Atmospheric Administration Fisheries Service (NOAA Fisheries) (contained in Appendices B and C of the BA for the proposed action [Jones & Stokes 2003c]). State and federal special-status species were included on the list if they are known from the geographic region and if suitable habitat occurs at the project site.

Botanical Resources

All seasonal wetlands except wetland features 1 and 5 (Figures 3.17-1a and 3.17-1b) were examined for the presence of special-status plants during the blooming period of the special-status plant species with potential to occur in the project area. Agricultural ditches were not surveyed for special-status plants because they are dry during much of the year and are disturbed habitats. Natural communities were mapped onto topographic maps (approximately 2.5 cm [1 in] equal to 213.4 m [700 ft] in scale) of the project area (Figures 3.17-1a and 3.17-1b). A list of plant species observed in the project area is contained in Appendix C.

Wildlife Resources

A portion of the project area was surveyed originally in 2001 for preparation of a draft EIR and BA for the Lower Northwest Interceptor Project (Sacramento Regional County Sanitation District 2003). Surveys for suitable habitat for special-status wildlife species were conducted in the project area from Morrison Creek west to Freeport Boulevard in spring and fall 2001.

Additional surveys of the project area, including the area west of Franklin Boulevard to Morrison Creek, were conducted in spring, fall, and winter 2001 and winter 2002. Reconnaissance-level surveys were conducted to determine habitat suitability for special-status wildlife species throughout the project area on November 7 and December 5, 2001. Biologists walked meandering transects throughout the project area and drove along existing dirt roads to map special-status biological resources and wildlife habitats on USGS 7.5-minute quadrangle maps. A field visit to the project area was also conducted on January 10, 2002, with Caltrans to gain consensus on how to describe general site characteristics, evaluate habitat for special-status species, and identify sensitive biological resources that could impose constraints on construction activities. An additional field meeting to the project area was conducted March 31, 2004, with Caltrans and USFWS. A list of wildlife species observed in the project area is contained in Appendix D.

On February 1, 2002, 33 elderberry shrubs located on the eastern end of the project area were surveyed. These elderberry shrubs, which provide habitat for the federally listed VELB, were planted in 1995 as part of a landscaping project on the SRCSD Bufferlands area along Franklin

Boulevard (Figure 3.20-1). The diameter of the stems were measured, and the stems were examined for exit holes. No exit holes or evidence of VELB were found.

An invertebrate ecologist collected 10 dry-season soil samples from potential listed vernal pool invertebrate habitats in seasonal wetland features 11 (which crosses the proposed roadway corridor) and 14 (Figure 3.17-1) for the Lower Northwest Interceptor Project (Sacramento Regional County Sanitation District 2003).

Affected Environment in the Project Area

Botanical Resources

Special-status plant species that could occur in the project area are listed in Table 3.20-1. Special-status plants identified as having moderate to high potential to occur in the project area are known to occur within a 16.1-km (10-mi) radius of the project area and are restricted to seasonally wet habitats (e.g., dwarf downingia, Bogg's Lake hedge-hyssop, and legenere) or freshwater marsh (e.g., Sanford's sagittaria).

Surveys of potential habitat for special-status plant species in seasonal emergent wetland features 2, 11, and 14, and freshwater marsh features 3, 4, 6, 8, and 9 were conducted in April 2001. An additional survey of freshwater marsh habitat for Sanford's arrowhead was conducted in August 2001. No special-status plants were observed during the surveys, and no effects on special-status plants are anticipated.

Wildlife Resources

Special-status wildlife species identified as having moderate to high potential to occur in the project area are known to occur within a 16.1-km (10-mi) radius of the project area (Figures 3.20-2a and 3.20-2b) include the following species.

- Vernal pool fairy shrimp (*Branchinecta lynchi*) (federally listed as threatened)
- Mid-valley fairy shrimp (*Branchinecta mesovallensis*) (federally proposed for listing as threatened or endangered)
- California linderiella (*Linderiella occidentalis*) (federal species of concern)
- Vernal pool tadpole shrimp (*Lepidurus packardi*) (federally listed as endangered)
- Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) (federally listed as threatened)
- Giant garter snake (*Thamnophis gigas*) (federally listed as threatened and state listed as threatened)
- Northwestern pond turtle (*Clemmys marmorata marmorata*) (federal species of concern and a state species of special concern)
- Swainson's hawk (*Buteo swainsoni*) (federal species of concern and state listed as threatened)
- White-tailed kite (*Elanus leucurus*) (federal species of concern and state fully protected species)

- Cooper's hawk (*Accipiter cooperi*) (state species of special concern)
- Sharp-shinned hawk (*Accipiter striatus*) (state species of special concern)
- Western burrowing owl (*Athene cunicularia*) (federal species of concern and state species of special concern)
- Northern harrier (*Circus cyaneus*) (state species of special concern)
- Loggerhead shrike (*Lanius ludovicianus*) (federal species of concern and state species of special concern)
- Double-crested cormorant (*Phalacrocorax auritus*) (state species of special concern)
- White-faced ibis (*Plegadis chihi*) (federal species of concern and state species of special concern)

Special-Status Vernal Pool Invertebrates

Suitable habitat for special-status vernal pool invertebrates was determined to occur in seasonal emergent wetlands features 1 and 5 (Figures 3.20-2a and 3.20-2b). No protocol-level surveys were conducted for vernal pool fairy shrimp, mid-valley fairy shrimp, California linderiella, or vernal pool tadpole shrimp in seasonal emergent wetland features 1 and 5. These species are inferred to be present in seasonal emergent wetland features 1 and 5 for the following reasons.

- The ponding duration of these two wetlands was observed over several consecutive field visits during the wet season, and wetland features 1 and 5 were observed to have sufficient ponding duration, suitable water temperatures, and other necessary conditions to allow special-status aquatic invertebrates to complete their life cycles.
- These wetlands are dominated by vegetation that requires habitat parameters similar to those required by special-status aquatic invertebrates. The dominant emergent vegetation at wetland feature 1 was observed to be a mixture of spikerush (*Eleocharis* sp.), slender popcorn flower (*Plagiobothrys stipitatus*), pennyroyal (*Mentha pulegium*), Italian ryegrass (*Lolium multiflorum*), and curly dock (*Rumex crispus*). The vegetation at wetland feature 5 was submerged at the time surveys were conducted and was not identified.
- The dry period of these seasonal wetlands, which is necessary for special-status vernal pool invertebrates to complete their life cycles, is inferred through the absence of perennial wetland species such as cattail (*Typha* spp.) and tule (*Scirpus* spp.), and the presence of annual wetland species.

Valley Elderberry Longhorn Beetle

Thirty-three elderberry shrubs that provide potential habitat for VELB occur within 30.5 m (100 ft) of the construction easement (Table 3.20-2). These shrubs are located on the eastern end of the project area along Franklin Boulevard on SRCSD Bufferlands property.

Table 3.20-1. Special-Status Plant Species: I-5/Cosumnes River Boulevard Interchange Project

Species Name	Legal Status[a]			Geographic Distribution	Habitat Requirements	Blooming Period	Potential Occurrence in the Project Area[b]
	Federal	State	CNPS				
Suisun marsh aster *Aster lentus*	–	–	1B	Sacramento–San Joaquin Delta, Suisun Marsh, Suisun Bay; Contra Costa, Napa, Sacramento, San Joaquin, and Solano Counties	Brackish and freshwater marsh, below 500 feet above sea level (asl)	August–November	Low
Ferris's milk-vetch *Astragalus tener* var. *ferrisae*	–	–	1B	Central Valley, from Butte County to Alameda County	Subalkaline flats and floodlands, usually on adobe soils of valley and foothill grasslands, below 200 feet asl	April–May	Low
Heartscale *Atriplex cordulata*	–	–	1B	Western Central Valley and valleys of adjacent foothills	Alkali grassland, alkali meadow, alkali scrub, below 660 feet asl	May–October	None
Brittlescale *Atriplex depressa*	–	–	1B	Western Central Valley and valleys of adjacent foothills on west side of Central Valley	Alkali grassland, alkali meadow, alkali scrub, chenopod scrub, playas, valley and foothill grasslands on alkaline or clay soils, below 660 feet asl	May–October	None
Valley spearscale *Atriplex joaquiniana*	–	–	1B	Western edge of Central Valley, from Glenn County to Tulare County	Alkali grassland, alkali scrub, alkali meadows, saltbush scrub, below 1,000 feet asl	April–September	None
Bristly sedge *Carex comosa*	–	–	2	Scattered throughout California, Oregon, and Washington	Wet places and lake margins	May–September	Low
Succulent owl's-clover *Castilleja campestris* ssp. *succulenta*	T	E	1B	Southern Sierra Nevada foothills, eastern San Joaquin Valley—Fresno, Madera, Merced, Mariposa, San Joaquin, and Stanislaus Counties	Vernal pools (often acidic soils)	April–May	Low
Hispid bird's-beak *Cordylanthus mollis* ssp. *hispidus*	–	–	1B	Central Valley—Alameda, Kern, Merced, Placer, and Solano Counties	Meadow, grassland, playa, on alkaline soils, below 500 feet asl	June–September	None

Table 3.20-1. Continued

Species Name	Legal Status[a]			Geographic Distribution	Habitat Requirements	Blooming Period	Potential Occurrence in the Project Area[b]
	Federal	State	CNPS				
Palmate-bracted bird's-beak *Cordylanthus palmatus*	E	E	1B	Livermore Valley and scattered locations in the Central Valley, from Colusa County to Fresno County	Alkaline grassland, alkali meadow, chenopod scrub	May–October	None
Dwarf downingia *Downingia pusilla*	–	–	2	California's Central Valley and South America	Vernal pools and mesic valley and foothill grasslands, 1,500 feet asl	March–May	High
Round-leaved filaree *Erodium macrophyllum*	–	–	2	Oregon to California; Sacramento Valley, northern San Joaquin Valley, central-western California, South Coast and northern Channel Islands (Santa Cruz Island)	Open sites, dry grasslands and shrublands below 4,000 feet asl	March–May	Low
Tuolumne button-celery *Eryngium pinnatisectum*	–	–	1B	Amador, Calaveras, Sacramento, and Tuolumne Counties	Vernal pools and moist areas in cismontane woodland and lower montane coniferous forest, 800–1,500 feet asl	June	Low
Stinkbells *Fritillaria agrestis*	–	–	4	Sierra Nevada foothills, Central Valley, northern Coast Ranges	Clay depressions or other areas with heavy soils in chaparral, cismontane woodland, and annual grassland	March–April	Low
Adobe-lily *Fritillaria pluriflora*	–	–	1B	Northern Sierra Nevada foothills, inner Coast Range foothills, Sacramento Valley—Butte, Colusa, Glenn, Lake, Napa, Plumas, Solano, Tehama, and Yolo Counties	Adobe soil, chaparral, woodland, valley and foothill grassland	February–April	Low
Bogg's Lake hedge-hyssop *Gratiola heterosepala*	–	E	1B	Inner north Coast Ranges, Central Sierra Nevada foothills, Sacramento Valley and Modoc Plateau—Fresno, Lake, Lassen, Madera, Modoc, Placer, Sacramento, Shasta, San Joaquin, Solano, and Tehama Counties	Clay soils in areas of shallow water, lake margins and vernal pool margins	April–June	Moderate

Table 3.20-1. Continued

Species Name	Legal Status[a]			Geographic Distribution	Habitat Requirements	Blooming Period	Potential Occurrence in the Project Area[b]
	Federal	State	CNPS				
Rose-mallow, a.k.a. California hibiscus *Hibiscus lasiocarpus*	–	–	2	Central and southern Sacramento Valley, Deltaic Central Valley—Butte, Contra Costa, Colusa, Glenn, Sacramento, San Joaquin, Solano, Sutter, and Yolo Counties	Wet banks, freshwater marshes, generally below 135 feet asl	August–September	Low
Northern California black walnut *Juglans californica* var. *hindsii*, a.k.a. *Juglans hindsii*	–	–	1B	Last two native stands are in Napa and Contra Costa Counties. Historically widespread through southern north inner Coast Range, southern Sacramento Valley, northern San Joaquin Valley, San Francisco Bay region	Canyons, valleys, riparian forest, riparian woodland, 160–660 feet asl	April–May	None present; protected only as native stands
Ahart's dwarf rush *Juncus leiospermus* var. *ahartii*	–	–	1B	Eastern Sacramento Valley, northeastern San Joaquin Valley—Butte, Calaveras, Placer, Sacramento, and Yuba Counties	Vernal pool margins, 100–330 feet asl	March–May	Low
Delta tule-pea *Lathyrus jepsonii* var. *jepsonii*	–	–	1B	Central Valley, especially the San Francisco Bay region, Alameda, Contra Costa, Fresno, Marin, Napa, Sacramento, San Benito, Santa Clara, San Joaquin, and Solano Counties	Coastal and estuarine marshes, below 1,000 feet asl	May–June	None
Legenere *Legenere limosa*	–	–	1B	Primarily in lower Sacramento Valley, also north Coast Ranges, northern San Joaquin Valley, and Santa Cruz Mountains	Deep, seasonally wet habitats such as vernal pools, ditches, marsh edges, and river banks, below 500 feet asl	April–June	High
Heckard's pepper-grass *Lepidium latipes* var. *heckardii*	–	–	1B	Southern Sacramento Valley—Glenn, Solano, and Yolo Counties	Annual grassland on margins of alkali scalds, below 660 feet asl	April–May	None

Table 3.20-1. Continued

Species Name	Legal Status[a]			Geographic Distribution	Habitat Requirements	Blooming Period	Potential Occurrence in the Project Area[b]
	Federal	State	CNPS				
Mason's lilaeopsis *Lilaeopsis masonii*	–	R	1B	Southern Sacramento Valley, Sacramento–San Joaquin Delta, northeast San Francisco Bay Area—Alameda, Contra Costa, Marin, Napa, Sacramento, San Joaquin, and Solano Counties	Freshwater and intertidal marshes, streambanks in riparian scrub, generally at sea level	April–October	Low
Delta mudwort *Limosella subulata*	–	–	2	Deltaic Central Valley—Contra Costa, Sacramento, San Joaquin, and Solano Counties; Oregon	Muddy or sandy intertidal flats and marshes, streambanks in riparian scrub, generally at sea level	May–August	Low
Pincushion navarretia *Navarretia myersii* ssp. *myersii*	–	–	1B	Central Sierra Nevada foothills, Central Valley—Amador, Merced, and Sacramento Counties	Vernal pools	May	Low
Slender Orcutt grass *Orcuttia tenuis*	T	E	1B	Lassen, Plumas, Tehama, Siskiyou, Lake, and Sacramento Counties	Vernal pools (on high-terrace Laguna formation in Sacramento County)	May–October	Low
Sacramento Orcutt grass *Orcuttia viscida*	E	E	1B	Endemic to Sacramento County	Vernal pools below 330 feet asl	May–July	Low
Sanford's arrowhead *Sagittaria sanfordii*	–	–	1B	Scattered in Central Valley and Coast Ranges	Freshwater marshes, sloughs, canals, and other slow-moving water habitats, below 1,000 feet asl	May–August	High; however, late-season surveys of habitat in the study area did not detect this species
Antioch Dunes evening primrose *Oenothera deltoides* ssp. *howellii*	E	E	1B	Contra Costa County; introduced occurrences in Sacramento County	Inland dunes below 100 feet asl	March–September	None
Crampton's tuctoria *Tuctoria mucronata*	E	E	1B	Southwestern Sacramento Valley—Solano and Yolo Counties	Mesic grassland, vernal pools, below 500 feet asl	April–July	Low

Table 3.20-1. Continued

[a] *Status explanations:*

– = *no listing.*

Federal

E = *listed as endangered under the federal ESA.*
T = *listed as threatened under the federal ESA.*
SC = *species of concern; species for which existing information indicates it may warrant listing but for which substantial biological information to support a proposed rule is lacking.*

State

E = *listed as endangered under the CESA.*
R = *listed as rare under the CNPPA. This category is no longer used for newly listed plants, but some plants previously listed as rare retain this designation.*

California Native Plant Society

1B = *List 1B species: rare, threatened, or endangered in California and elsewhere.*
2 = *List 2 species: rare, threatened, or endangered in California but more common elsewhere.*
4 = *List 4 species: plants of limited distribution.*

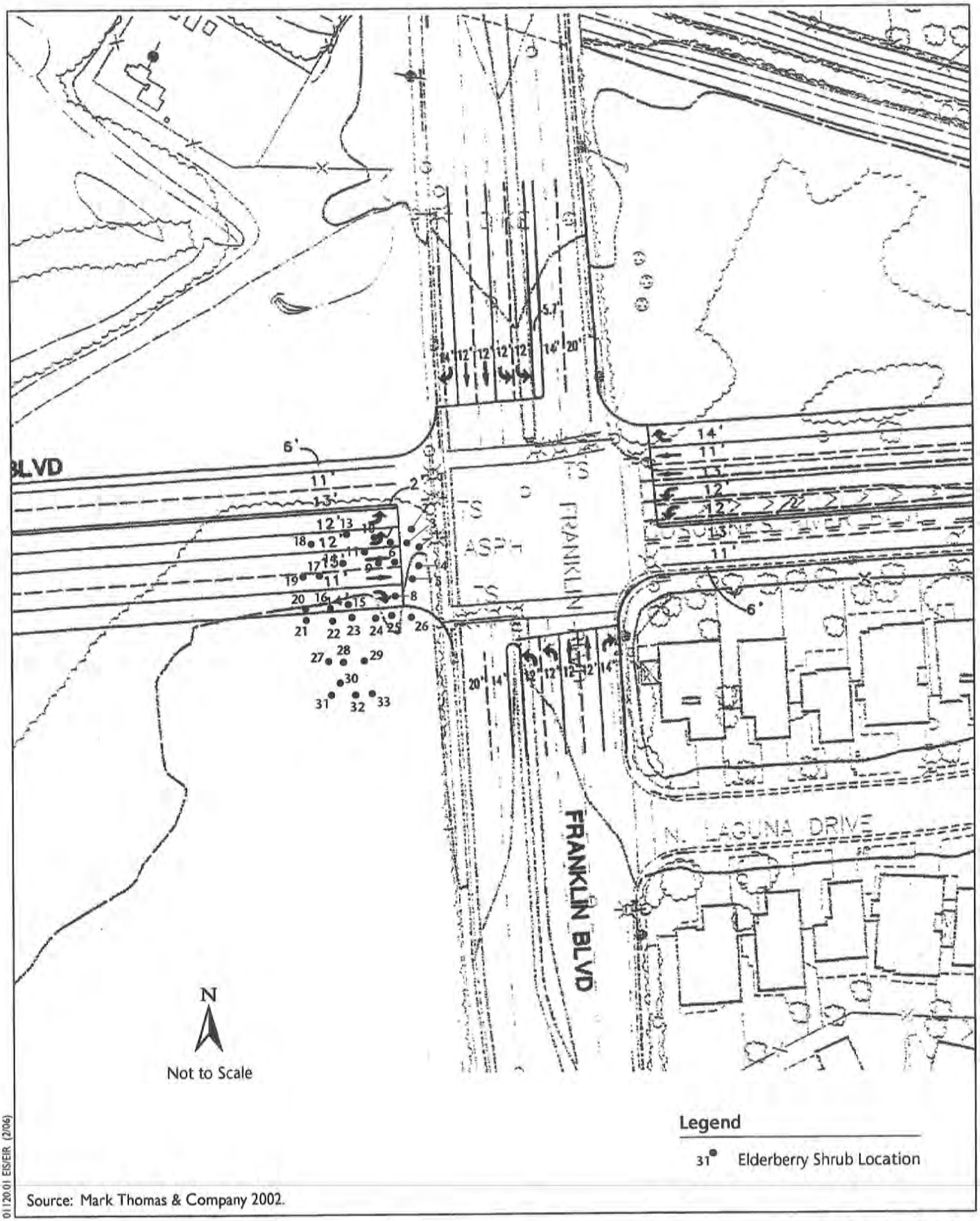
[b] *Potential occurrence in the project area:*

High: *CNDDB or other documents record the known occurrence of the plant in the region (a 16.1-kilometer [10-mile] radius of the study area). Suitable habitat conditions and suitable microhabitat conditions are present.*

Moderate: *CNDDB or other documents record the known occurrence of the plant in the region (a 16.1 kilometer [10-mile] radius of the study area). Suitable habitat conditions are present but suitable microhabitat conditions are not.*

Low: *CNDDB or other documents do not record occurrence of the plant in the region (a 16.1 kilometer [10-mile] radius of the study area), and/or habitat conditions are of poor quality.*

None: *CNDDB or other documents do not record occurrence of the plant in the region (a 16.1 kilometer [10-mile] radius of the study area), and/or suitable habitat is not present in any condition.*



Source: Mark Thomas & Company 2002.

01120.01 EIS/EIR (2/06)

Figure 3.20-1
Locations of Potentially Affected Elderberry Shrubs
I-5/Cosumnes River Boulevard Interchange Project

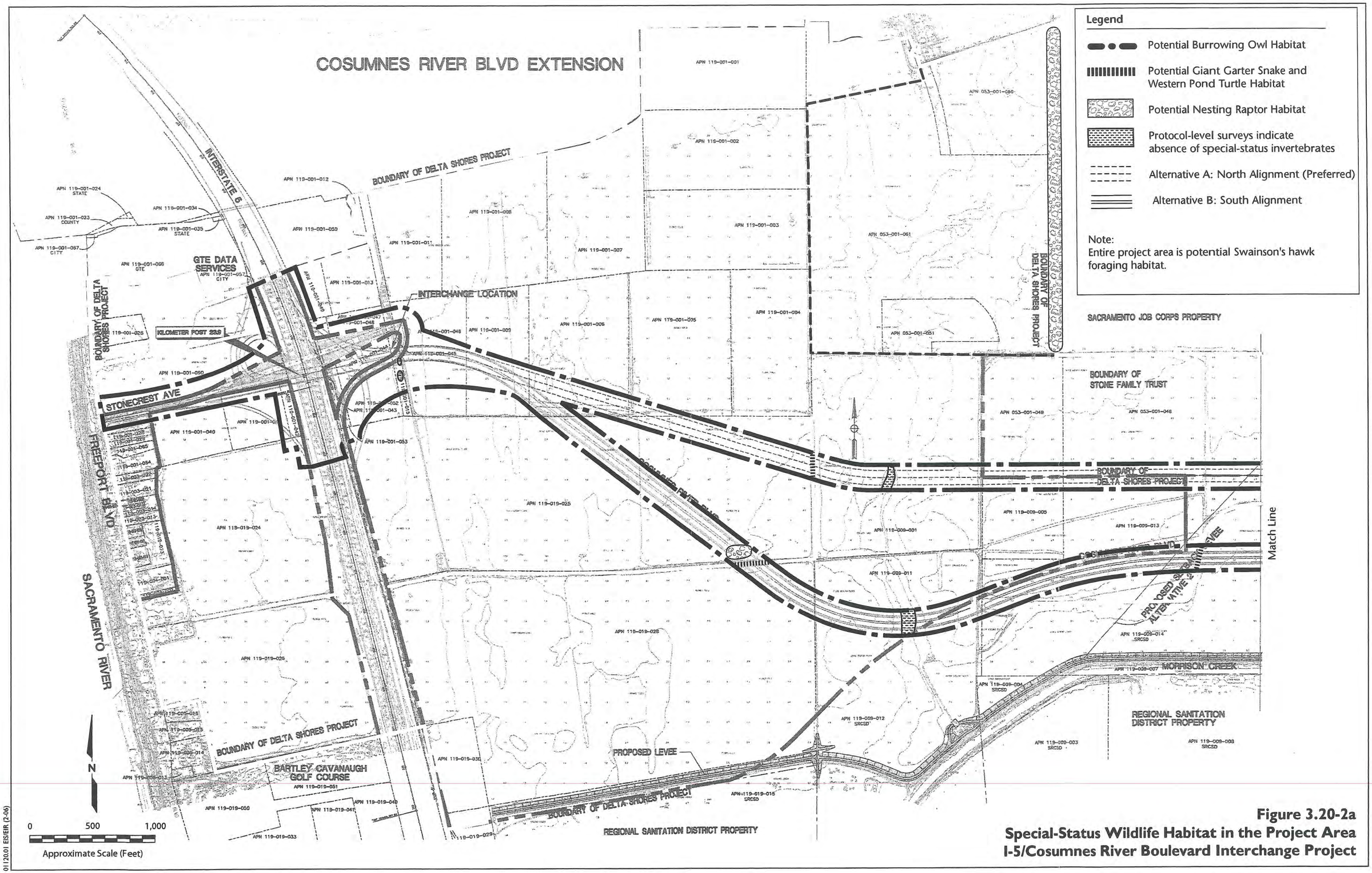


Figure 3.20-2a
Special-Status Wildlife Habitat in the Project Area
I-5/Cosumnes River Boulevard Interchange Project

01120.01 EIS/EIR (2-06)

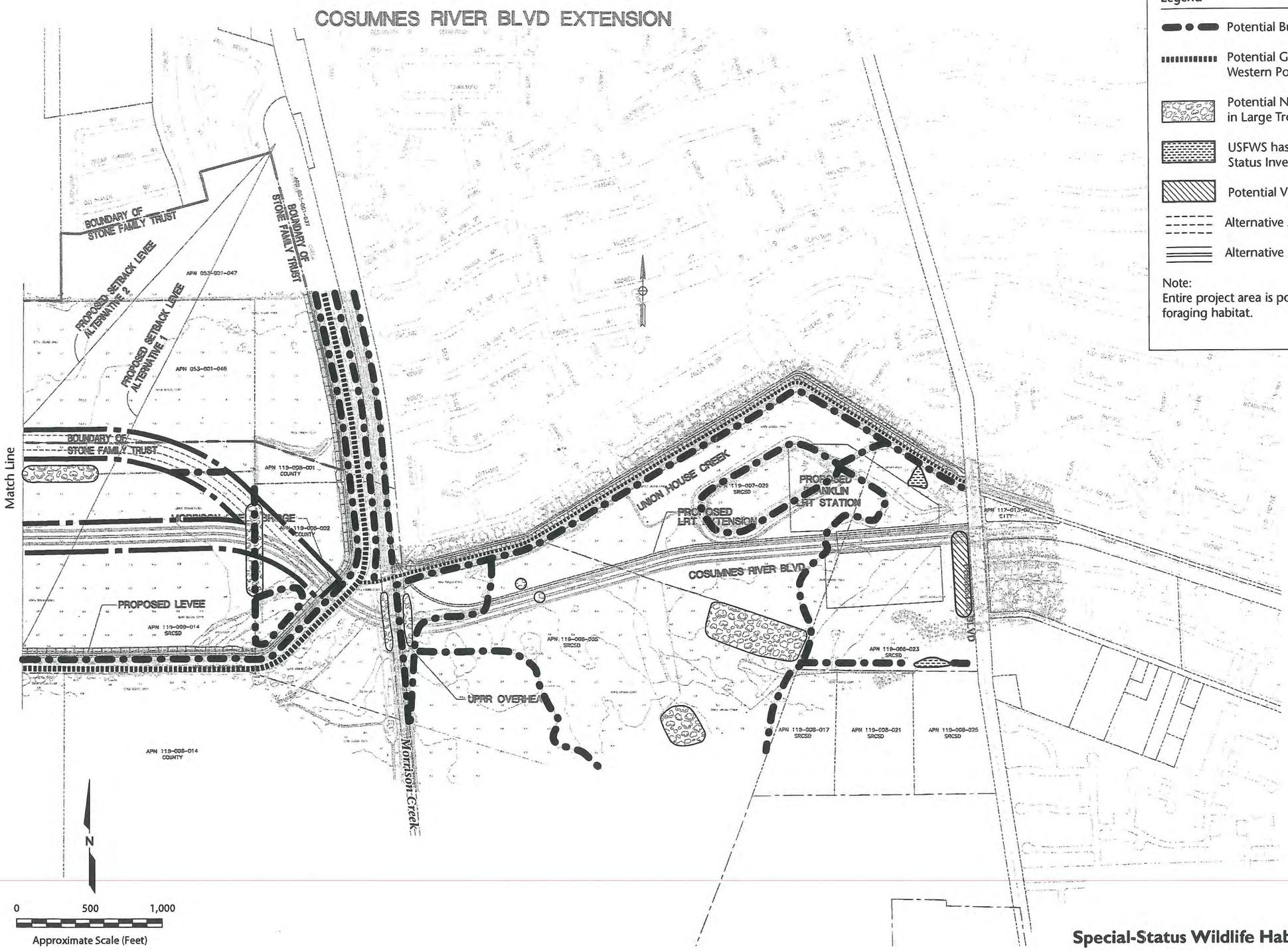


Figure 3.20-2b
Special-Status Wildlife Habitat in the Project Area
I-5/Cosumnes River Boulevard Interchange Project

01120.01 EIS/EIR (2-06)

Table 3.20-2. Elderberry Shrubs Affected by the I-5/Cosumnes River Boulevard Interchange Project

Shrub Number	Number of Stems (size)			Exit Holes	Habitat Association
	≥2.5 cm <7.6 cm (≥1 in. <3 in.)	≥7.6 cm <12.7 cm (≥3 in. <5 in.)	≥12.7 cm (≥5 in.)		
1	2	1	0	0	Annual grassland
2	0	0	1	0	Annual grassland
3	0	0	1	0	Annual grassland
4	1	2	0	0	Annual grassland
5	0	0	1	0	Annual grassland
6	0	1	1	0	Annual grassland
7	0	1	0	0	Annual grassland
8	0	0	1	0	Annual grassland
9	0	0	1	0	Annual grassland
10	0	0	1	0	Annual grassland
11	0	0	1	0	Annual grassland
12	0	0	1	0	Annual grassland
13	1	0	1	0	Annual grassland
14	0	0	1	0	Annual grassland
15	0	0	1	0	Annual grassland
16	5	0	0	0	Annual grassland
17	3	1	0	0	Annual grassland
18	0	0	1	0	Annual grassland
19	0	0	1	0	Annual grassland
20	2	0	0	0	Annual grassland
21	12	0	1	0	Annual grassland
22	1	0	1	0	Annual grassland
23	1	0	1	0	Annual grassland
24	0	1	0	0	Annual grassland
25	7	0	0	0	Annual grassland
26	11	0	0	0	Annual grassland
Total	**46**	**7**	**17**	**0**	

Giant Garter Snake and Northwestern Pond Turtle

Suitable giant garter snake and northwestern pond turtle habitat within the project area occurs in Union House and Morrison Creeks. Protocol-level surveys were not conducted for either species in either creek. There were no incidental giant garter snake or northwestern pond turtle observations during the field surveys conducted in spring and fall 2001, on November 7 and December 5, 2001, or on January 10, 2002. Giant garter snake and northwestern pond turtle presence in Morrison and Union House Creeks is inferred for the following reasons.

- Morrison Creek and Union House Creek provide adequate water during the species' active season, and vegetation suitable for foraging and escape cover.
- Open areas for basking and winter hibernation burrows are also available on the creeks' banks.
- Morrison and Union House Creeks are within the historic and/or current range of the species.
- There are historic records of giant garter snake and northwestern pond turtle presence within the Morrison Creek watershed south of the project area (California Natural Diversity Database 2001).

Special-Status Nesting Raptors

Numerous large trees that could provide nesting habitat for raptors, including the state-threatened Swainson's hawk, occur within the project area. During a survey conducted in spring 2001 for the Lower Northwest Interceptor Project (Sacramento Regional County Sanitation District 2003), an occupied white-tailed kite nest was observed on the east side of the UPRR near the confluence of Union House and Morrison Creeks. An occupied red-tailed hawk nest was also observed in a tree just north of the northern alignment during the same survey. Western burrowing owl nesting habitat is located throughout the project area in annual grasslands located on the SRCSD Bufferlands east of Morrison Creek, along Union House and Morrison Creek levees, and along dirt roads located throughout the project area. No burrowing owls were observed in any of the field surveys, although SRCSD biologists have documented burrowing owl presence along the Union House Creek levee and in the grasslands located on the SRCSD Bufferlands.

Foraging habitat for Swainson's hawks and other raptors occur in the annual grasslands located on the SRCSD Bufferlands east of Morrison Creek and on agricultural fields located west of Morrison Creek. These grasslands also provide potential nesting habitat for northern harriers.

3.20.3 Impacts

Approach and Methodology

The effects of the proposed action on threatened and endangered species were assessed based on a review of the engineering plans, and the impact mechanisms and assumptions discussed in the following sections.

Impact Mechanisms

Habitat for threatened and endangered species could be directly or indirectly affected by construction of the project. The following types of activities could cause varying degrees of impacts on these resources:

- Vegetation removal, grading, and paving activities during road construction.
- Temporary stockpiling and sidecasting of soil, construction materials, or other construction wastes.
- Soil compaction, dust, and water runoff from the construction site into adjacent areas.
- Introduction of invasive nonnative species in construction areas that could displace native species in adjacent open space areas in the SRCSD Bufferlands.
- Construction activities in wetlands that contain ponded or flowing water and saturated soils.
- Runoff of herbicides, fertilizers, diesel, gasoline, oil, raw concrete, and other toxic materials used for road construction and maintenance into sensitive resource areas (e.g., wetlands, drainageways, and streams).

Impact Analysis Assumptions

In assessing the magnitude of possible impacts, the following project understandings and assumptions were made regarding project construction.

- The proposed action would result in temporary and permanent impacts on special-status wildlife resources in the project area. Temporary impacts occur only during the construction period, and would be within temporary equipment staging and equipment movement areas and any new temporary access roads. Permanent impacts include irreversible changes from vegetated to developed areas. The permanent impact areas would include all areas within the project footprint that would not be revegetated or restored.
- Project impacts may be direct or indirect. Direct impacts would be within the project footprint or temporary construction areas. Indirect impacts would occur outside of the project footprint and construction area.

Build Alternative A: Freeport to Franklin North Alignment

Impact TES-1: Temporary, Indirect Increased Sedimentation in Suitable Habitat for Vernal Pool Invertebrates

Suitable habitat for vernal pool fairy shrimp (federally threatened), mid-valley fairy shrimp (federally proposed), California linderiella (federal species of concern), and vernal pool tadpole shrimp (federally endangered) occurs in seasonal emergent wetland features 1 and 5. Wetland 1, which has an area of 0.5 acre, is located approximately 150 feet from the construction corridor and 250 feet from the edge of the roadway to be constructed, and the elevation of the road (based on current design) is approximately 2 feet higher than the edge of the wetland. Wetland 5, which has an area of 0.4 acre, is located more than 500 feet outside the construction corridor and would not be affected by construction activities. Potential indirect effects on listed vernal pool invertebrates could occur because of increased sedimentation from soil erosion into seasonal emergent wetland feature 1 or hazardous materials entering wetland 1 after the road is completed. The road design will direct all stormwater runoff into the storm drain system, which will not drain north, and away from the wetland. Mitigation has been identified for this effect (TES-1, TES-2, and TES-3), as well as control measures in the SWPPP.

Impact TES-2: Mortality or Disturbance to Valley Elderberry Longhorn Beetles

Elderberry shrubs provide habitat for VELB (federally threatened). Thirty-three elderberry shrubs that have potential to support VELB were identified by Jones & Stokes biologists in the project area (Figure 3.20-1). Shrubs were considered to have potential to support VELB if they had stems larger than 1 inch in diameter (U.S. Fish and Wildlife Service 1999). Twenty-six of these shrubs would be directly affected (i.e., removed) by the proposed action, and seven would potentially be indirectly affected because they are located 6.1 to 30.5 m (20 to 100 ft) from the construction easement. Direct and indirect impacts could result in mortality or disturbance to VELB. Mitigation has been identified for this effect (TES-1, TES-2, TES-4, and TES-5).

Impact TES-3: Loss of Habitat for Giant Garter Snakes

Morrison and Union House Creeks provide potential aquatic habitat for giant garter snake (federally and state-threatened) in the project area. The upland habitat consists of annual grassland, agricultural lands, and levees. Giant garter snakes occurring within the construction corridor could be harmed or killed by the construction of the Morrison Creek overcrossing. Construction equipment could crush snakes, snakes could be buried in collapsed burrows, fuel spills in Morrison or Union House Creek could kill snakes or could kill its prey base, or hibernating snakes could be driven from their burrows by construction activities. In addition, construction of the bridge piers for the overcrossing would result in permanent loss of habitat.

A total of 3.108 acres of upland habitat for giant garter snake will be temporarily affected and 0.077 acre of upland habitat will be permanently affected by the project, and 0.136 acre of aquatic habitat will be temporarily affected and 0.002 acre of aquatic habitat will be permanently affected by the project. Mitigation has been identified for this effect (TES-1, TES-2, TES-6, and TES-7), as well as control measures in the SWPPP, .

Impact TES-4: Potential Harm or Mortality of Northwestern Pond Turtles

Northwestern pond turtles (state species of special concern and federal species of concern) could inhabit creeks within the project area. Western pond turtles also use adjacent upland habitats for hibernation and cover. Population declines of this species have been attributed to a variety of factors, including habitat loss from urbanization, water projects, and agricultural conversion. This species is subject to further population declines as a result of continued loss and disturbance of occupied habitat. Although there are records that document western pond turtles in the vicinity of the proposed action (California Natural Diversity Database 2001), there are no records of observations within the corridor itself, and there were no turtles observed during surveys. However, suitable habitat for western pond turtles was identified at several sites during field surveys, including Union House and Morrison Creeks. Construction activities could result in the harm or death of western pond turtles occurring within the construction corridor. Mitigation has been identified for this effect (TES-1, TES-2, TES-6, and TES-8).

Impact TES-5: Disturbance of Nesting Swainson's Hawks and Loss of Swainson's Hawk Foraging Habitat

Suitable nesting and foraging habitat for Swainson's hawks (state-threatened) exists throughout much of the project area. Examination of existing data from the CNDDB and other sources, as well as field surveys, indicates the presence of active nest sites within 0.8 km (0.5 mi) of the construction easement (Figures 3.20-2a and 2b). Although suitable nesting habitat exists within the construction easement (e.g., riparian vegetation along Morrison Creek, the Sacramento River, and smaller drainages), no active nests were found in the construction easement (i.e., project footprint). However, active nests may be established in the construction easement during the construction of the proposed action. Suitable grassland and agricultural foraging habitat is located along much of the corridor, and would be subject to permanent and temporary disturbances from the construction of the roadway. Impacts on foraging have been calculated by assuming permanent loss of all grassland and agricultural habitats in the construction easement. In addition, noise and other construction-related disturbances may affect nesting Swainson's hawks in the vicinity of the construction corridor during the breeding season (March through August). A number of mature willow and cottonwood trees that could provide potential nesting habitat are expected to be removed as a result of construction-related activities. Construction of the Morrison Creek/UPRR bridge would remove up to 10 mature willows and six mature cottonwoods, and may shade smaller trees after construction is complete. Affected trees would also include two cottonwoods in seasonal wetland feature 2; willows and cottonwoods in freshwater marsh features 3, 4, and 6; one or two cottonwoods in drainageway feature 9; and one or two cottonwoods in agricultural ditch feature 12. The removal of these trees along with disturbance of nest sites and the permanent loss of up to 6.4 ha (16 ac) of agricultural land and annual grassland that provide foraging habitat within the roadway footprint may contribute to continuing local and statewide declines of Swainson's hawk. Mitigation has been identified for this effect (VEG-2, VEG-3, TES-1, TES-2, TES-9, and TES-10).

Impact TES-6: Disturbance of Nesting Special-Status Birds and Loss of Foraging Habitat

Suitable nesting and foraging habitat for several special-status birds (double-crested cormorant, white-faced ibis, white-tailed kite, northern harrier, Cooper's hawk, western burrowing owl, loggerhead shrike, and tricolored blackbird) is located throughout much of the project area. Examination of existing data from the CNDDB and other sources, as well as field surveys, indicates the presence of double-crested cormorant, white-tailed kite, northern harrier, and western burrowing owl, and loggerhead shrike within the construction easement. Nesting of several of these species in adjacent lands is documented (California Natural Diversity Database 2001). Double-crested cormorant, white-faced ibis, white-tailed kite, Cooper's hawk, loggerhead shrike, and tricolored blackbird could nest, roost, or forage in riparian, woodland, and open water habitats along Union House Creek, Morrison Creek, the Sacramento River, and smaller drainages along the project area. Burrowing owl and northern harrier could use agricultural and grassland areas throughout the project area. Disturbance of nest sites by noise and other construction-related disturbances and loss of foraging habitat may cause nest failure or a reduction of available habitat, potentially contributing to local and regional declines of these species. Mitigation has been identified for this effect (TES-1, TES-2, TES-9, TES-10, and TES-11).

Build Alternative B: Freeport to Franklin South Alignment

The impacts under this alternative would be the same as those described for Build Alternative A.

No-Build Alternative (No Project)

Under this alternative, there would be no adverse effects on listed vernal pool invertebrates, VELB, giant garter snakes, northwestern pond turtles, Swainson's hawks, or special-status bird species.

3.20.4 Avoidance, Minimization and Mitigation Measures

Mitigation Measure TES-1: Environmental Education Program

1. The applicants shall include a copy of the USFWS biological opinion within its solicitations for design and construction of the proposed project making the primate contractor responsible for implementing all requirements and obligations included within the biological opinion, and to educate and inform all other contractors involved in the project as to the requirements of the biological opinion. A copy of the solicitations containing the biological opinion also will be provided to the Chief of Endangered Species (Central Valley) at the SFWO.
2. At least 30 days prior to initiating construction activities, the project proponents shall submit the names and curriculum vitae of the biological monitor(s) for the proposed project.
3. An environmental education program that focuses on the importance of onsite biological resources, including special status species, will be developed and implemented. All construction personnel, including contractors, will receive this Service-approved environmental awareness training, which will be conducted by a Service-approved biologist. The training will include information on the special status species, including the snake, the beetle, and the listed vernal pool crustaceans, the required avoidance and minimization measures to avoid take of these species and their habitats, and possible penalties for not

complying with the requirements. The Service-approved biologist will inform all construction personnel about the life history of these special status species, the importance of onsite habitats for these species, and the terms and conditions of this biological opinion. Written documentation of the training must be submitted to the Sacramento Fish and Wildlife Office within 30 days of the completion of training. As needed, training shall be conducted in Spanish for Spanish language speakers.

Mitigation Measure TES-2: Avoid and Minimize Indirect Impacts on Special-Status Wildlife Species

1. The project proponents will ensure that the temporary loss of giant garter snake, valley elderberry longhorn beetle, and vernal pool crustacean habitat is confined to the proposed project site. Prior to the commencement of construction activities, high visibility fencing that is at least 5 feet tall will be erected around the habitats of these federally listed species to identify and protect these designated Environmentally Sensitive Areas (ESA) from encroachment of personnel and equipment. These areas will be avoided by all construction personnel. The fencing shall be inspected before the start of each work day and maintained by the project proponents until completion of the project. The fencing may be removed only when the construction of the project is completed.
   a. Fencing will be established at least 200 ft from the edge of aquatic snake habitat.
   b. Fencing will be established at a minimum setback of 20 feet from the dripline of each elderberry shrub that is within 100 feet of the proposed project alignment.
   c. Fencing will be established at a minimum distance of 250 feet from the edge of vernal pool habitat.
2. Signs will be posted every 50 feet along the edge of the ESAs, with the following information: "This area is habitat of federally-threatened and/or endangered species, and must not be disturbed. These species are protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." The signs should be clearly readable from a distance of 20 feet, and must be maintained for the duration of construction.
3. After construction activities are complete, any temporary fill or construction debris shall be removed and disturbed areas restored to their pre-project conditions.
4. A Service-approved biologist will inspect construction-related activities at the project site where threatened and endangered species are located (e.g., Morrison Creek bridge and the Cosumnes River Boulevard/Franklin Boulevard intersection) to ensure that no unauthorized take of federally listed species or destruction of their habitat occurs. The biologist will have the authority to stop construction activities that may result in such take of species or destruction of habitat until appropriate corrective measures have been completed. The biologist will be required to immediately report any unauthorized impacts to the Service.
5. Any unauthorized deviation from these proposed conservation measures will be reported within one (1) working day of its discovery to the Division Chief of Endangered Species at the Sacramento Fish and Wildlife Service Office. Written notification to the Service must be made within three (3) calendar days and include the date, time, and precise location of the

event on a 7.5-minute quadrangle, and any other pertinent information. In addition, color photographs shall document the incident and be included in the written notification.

6. Measures consistent with the current Caltrans' Construction Site Best Management Practices (BMPs) Manual, including the Storm Water Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) Manuals, will be implemented to minimize effects to the snake during construction. Best management practices will be implemented to prevent sedimentation from entering ESAs and to reduce erosion, dust, noise, and other deleterious aspects of construction related activities. These BMPs may include, but are not limited to, silt fencing, temporary berms, restrictions on cleaning equipment in or near ESAs, installation of vegetative strips, and temporary sediment disposal. Runoff from dust control and hazardous materials will be retained on the construction site and prevented from flowing into the ESAs.
7. During construction operations, the number of access routes, number and size of staging areas, and the total area of the proposed project activity will be limited to the minimum necessary. Routes and boundaries will be clearly demarcated. Movement of heavy equipment to and from the project site will be restricted to established roadways to minimize habitat disturbance. Project-related vehicles shall observe a 20-mile-per-hour speed limit within construction areas, except on City and County roads and on County, State, and Federal highways. This is particularly important during periods when the snake may be sunning or moving on roadways. All heavy equipment, vehicles, and supplies will be stored at the designated staging area at the end of each work period.
8. During construction operations, stockpiling of construction materials, portable equipment, vehicles, and supplies will be restricted to the designated construction staging areas and exclusive of the ESAs. The applicant will ensure contamination of habitat does not occur during such operations. All workers will be informed of the importance of preventing spills and appropriate measures to take should a spill occur.

Mitigation Measure TES-3: Avoid Indirect Impacts on Listed Vernal Pool Invertebrates

1. Prior to the initiation of construction activities, the project proponent shall compensate for indirect effects to the habitat of listed vernal pool crustacean by purchasing the equivalent of 1.0 acre of vernal pool habitat preservation credits within a Service-approved preservation bank.
2. The applicant shall ensure that activities that are inconsistent with the maintenance of the suitability of vernal pool crustacean habitat and the associated on-site watershed are prohibited. These include, but are not limited to (1) the alteration of existing topography that may alter hydrology into habitat for Federally-listed vernal pool crustaceans; (2) the placement of any new structures within suitable habitat; (3) dumping, burning, and/or burying of rubbish, garbage, or any other wastes and fill materials; (4) the placement of stormwater drains; (5) fire protection activities not required to protect existing structures at the proposed project site; and (6) use of pesticides or other toxic chemicals.

Mitigation Measure TES-4: Avoid Impacts on Valley Elderberry Longhorn Beetles

1. Project construction shall be prohibited within 100 feet of the elderberry plants during the beetle emergence and mating period (*e.g.*, March 15 through June 15) to eliminate any indirect effects of construction on the beetle or its eggs.

2. No application of herbicides, insecticides, and/or other chemical agents shall occur within 100-feet of the elderberry plants or where they might drift or wash into the area of the elderberry plants.

Mitigation Measure TES-5: Compensate for Direct Impacts on Valley Elderberry Longhorn Beetles

1. The 26 elderberry shrubs, which are located within 20 feet of the centerline of the proposed alignment of the project and cannot be avoided, shall be transplanted to a Service-approved conservation area. Transplanting must occur while the elderberry plants are dormant, between November and the first two weeks of February, after they have lost their leaves. The Service will be consulted prior to transplantation and a Service-approved biologist will monitor the transplanting activities. These shrubs will be transplanted according to the Service's July 9, 1999 *Conservation Guidelines for the Valley Elderberry Longhorn Beetle* (Beetle Conservation Guidelines; Service 1999a).

   a. The planting area shall be at least 1,800 square feet for each elderberry transplant. The elderberry shrubs shall be cut back to six feet from the ground or to 50 percent of its height—whichever is taller. The remaining trunks will be removed using a tree spade, backhoe, front loader, or other suitable equipment. The trunks and all stems measuring one inch or greater in diameter will be replanted at the conservation site as soon as possible. Care will be taken to ensure than the soil is not dislodged from the roots of the plants. The shrubs will be planted in an excavated hole approximately three to four feet deep, and will be planted so that the top of the rootballs are level with the surrounding ground surface.

   b. After the shrubs are planted, the soil will be saturated with water. Fertilizers or other supplements will not be used in the conservation site and pruning treatments will not be used on the shrubs because the effects of these substances on the beetle are not known. The manager of the conservation site will be responsible for any further maintenance and monitoring of the transplanted elderberry shrubs and the planting, maintenance, and monitoring of elderberry seedlings and associated native plants.

2. Prior to ground breaking activities at the project site, the project proponents will purchase the equivalent of 26.0 beetle habitat credits at a Service-approved conservation bank. At least 111 rooted elderberry seedlings and 111 associated native plant species will be planted. The minimum area required is 0.92 acre (39,960 square feet) to ensure that no more than five elderberry seedlings and five associated native plants are planted per 1,800 square feet.

3. The conservation area shall be managed and monitored in perpetuity as outlined in the Beetle Conservation Guidelines. This includes the management and monitoring of the conservation area for either ten (10) consecutive years or seven (7) years over a 15-year period, with monitoring reports submitted for each monitoring year. Additionally, a management plan must be prepared which describes the long-term protection of this conservation area in order to protect the area in perpetuity as habitat for the valley elderberry longhorn beetle.

4. Seven additional elderberry shrubs adjacent to the proposed construction right-of-way will not be removed from the project site. These shrubs are between 20 ft (6 m) and 100 ft (30.5 m) of the proposed project alignment. The project proponent will install protective fencing a minimum of 20 ft (6 m) outside the perimeter of the driplines of these elderberry plants prior to initiating any construction activities on the site. Signs will be posted every 50 feet along the edge of the avoidance area, stating that the area is protected habitat. These buffer areas shall be protected from adverse effects resulting from the project. There will be no physical alterations of any type within the area enclosed by the fencing. Protective fencing shall be removed following project completion.

5. A post-construction walkthrough will be conducted to assess whether any damage occurred to vegetation within the buffer areas. Damage may include accidental cutting of vegetation or visible physical damage to roots, stems, and leaves. If damage is observed, vegetation within the buffer areas will be restored with appropriate native plant species. Erosion control measures and exotic weed abatement measures shall be implemented. If unanticipated damage is done to elderberry shrubs, the Service will be notified and appropriate compensation will be implemented.

Mitigation Measure TES-6: Avoid Impacts on Giant Garter Snakes

1. The project proponents will conduct construction activity within giant garter snake habitat (*e.g.* aquatic, upland, and rice habitat) between May 1 and October 1. This is the active period for the snake and direct mortality is lessened, because snakes are expected to actively move and avoid danger. If it appears that construction activity may go beyond October 1, the project proponents will contact the Service as soon as possible and no later than September 15 to determine if additional measures are necessary to minimize take. Construction activities within 200 feet (61 m) from the banks of snake aquatic habitat will be avoided during the snake's inactive season.

2. Aquatic habitat will be dewatered 15 days prior to the initiation of construction activities. If complete dewatering is not possible, potential snake prey (*i.e.,* fish and tadpoles) will be removed so that snakes and other wildlife are not attracted to the construction area.

3. At most 24-hours before the start of construction activities, the project site will be surveyed for giant garter snakes by a qualified biologist. Surveys of the project area will be repeated if a lapse in construction activity of two weeks or greater occurs.

4. If excavation within the Morrison Creek channel is necessary, excavation for removal of accumulated sediments will be done by using equipment located on and operated from the top of the bank.

5. A qualified, Service-approved biologist will be available for monitoring throughout all phases of construction that may result in adverse affects to the giant garter snake. If giant garter snakes are observed in the construction area, the on-site monitoring biologist will have the authority to stop construction activities in the immediate area until appropriate corrective measures have been completed or it is determined that the snake will not be harmed. The biologist will redirect construction activities away from the snake, so that the snake will be allowed to move away from the work area on its own volition. The biologist will report any snakes encountered and any incidental take of the snakes to the Chief of the Endangered

Species Division of the Sacramento Fish and Wildlife Service Office immediately, within three (3) working days.

6. The project proponents will not place any plastic, monofilament, jute, or similar erosion control matting that could entangle giant garter snakes on the project site within 250 feet of giant garter snake habitat.
7. To eliminate an attraction to predators of the snake, all food-related trash items, such as wrappers, cans, bottles, and food scraps, must be disposed of in closed containers and removed at least every other day from the entire project site.
8. After completion of construction activities, the project proponents will remove any temporary fill and construction debris. The project proponents will restore all temporarily affected snake habitats, including aquatic habitat and upland habitat. The project proponents will restore all snake habitat subject to temporary ground disturbances, including storage and staging areas and temporary roads. These areas shall be re-contoured, if appropriate, and re-vegetated with appropriate locally collected native plant species to promote restoration of the area to pre-project conditions. Appropriate methods and plant species used to re-vegetate such areas will be determined on a site-specific basis in consultation with the Service and the CDFG. Restoration work may include replanting emergent vegetation Refer to the Service's *Guidelines for the Restoration and/or Replacement of Giant Garter Snake Habitat* (Service 1997). A written report shall be submitted to the Service within ten (10) working days of the completion of construction at the project site.
9. The project proponents will maintain and monitor the project site for one year following the completion of construction and restoration activities. Monitoring reports documenting the restoration effort should be submitted to the Service upon the completion of the restoration implementation and one year after the restoration implementation. Monitoring reports should include photo-documentation, when restoration was completed, what materials were used, specified plantings, and justifications of any substitutions to the Service-recommended guidelines.

Mitigation Measure TES-7: Compensate for Direct Impacts on Giant Garter Snakes

To offset losses resulting from temporarily and permanently affected giant garter snake habitat, the applicant shall purchase off-site giant garter snake habitat credits from a Service-approved snake habitat conservation area servicing the area where the proposed project effects occur. All temporary effects will be compensated at a 1:1 ratio, and all permanent effects will be compensated at a 3:1 ratio, as provided for in the March 11, 2005 Biological Opinion. Prior to the initiation of construction activities, the project proponent will purchase the snake habitat credits from a Service-approved snake conservation area to compensate for both temporarily affected and permanently affected snake habitat.

Mitigation Measure TES-8: Avoid Impacts on Northwestern Pond Turtles

To reduce potential impacts on northwestern pond turtles, the City will retain a biologist to conduct a survey for northwestern pond turtles within 24 hours of the start of construction activities in suitable habitat located in the construction easement. If a turtle is found in the construction easement, the biologist will try to passively move the turtle out of the area. If a turtle becomes trapped during construction activities in the waterway, a biologist will remove the turtle from the work area and place it downstream of the construction easement. Seasonal

construction restriction applicable to giant garter snakes will serve to protect hibernating northwestern pond turtles (refer also to Mitigation Measure TES-6).

Mitigation Measure TES-9: Avoid Impacts on Nesting Swainson's Hawks

Swainson's hawks could establish nests in numerous locations that were not found to be active during initial surveys. Also, construction is expected to span multiple years. Therefore, a qualified biologist will conduct preconstruction surveys each construction year to locate all active nest sites within 0.8 km (0.5 mi) of construction activities. A 0.4-km (0.25-mi) buffer zone around all known and suspected Swainson's hawk nests will be established. The 0.4-km (0.25-mi) buffer and a 91.4-m (100-yard [yd]) [300-ft] buffer will be marked with specific identifiable flags. Construction will be restricted to areas more than 91.4 m (100 yd) [300 ft] from active nests until after chicks have hatched in June. Vehicles will be allowed to drive past the nest within the 91.4-m (100-yd) [300-ft] buffer zone but not allowed to stop. If, through consultation with DFG, construction is allowed to occur within 0.4 km (0.25 mi) of an active nest, a biological monitor will observe the nesting hawks for stressed/detrimental behavior that threatens nest success. If there appears to be a threat to nesting success resulting from construction activity within the 0.4-km (0.25-mi) buffer, work will be halted until the hawk's behavior normalizes and the threat has dissipated. The most obvious and dangerous detrimental behavior occurs when the hawk is scared off the nest. If that occurs, even momentarily, construction will stop immediately within 0.4 km (0.25 mi) of the nest for at least 1 hour after the hawk returns to the nest and her behavior appears to normalize. When construction resumes, if the hawk is scared off the nest a second time, the contractor will not resume construction within that 0.4-km (0.25-mi) zone until having consulted with DFG to discuss further options. Other stressors/detrimental behaviors that the monitor will look for include the hawk being off the eggs while still on the nest (e.g., circling/walking around the nest and calling). The biological monitor will also watch for signs that the hawks are paying attention to construction instead of behaving normally (e.g., sitting calmly on the nest, watching out for or scaring away potential predators). When construction crews are within 0.4 km (0.25 mi) of an active nest, measures will be taken to reduce the visibility of the humans to the greatest extent possible (e.g., work behind their vehicles, stay in their vehicles) because the appearance of people tends to disturb birds much more than vehicles and other machinery.

Mitigation Measure TES-10: Compensate for Loss of Swainson's Hawk Foraging Habitat

The City will mitigate for permanent impacts on 6.5 ha (16 ac) of foraging habitat by paying into a mitigation bank program approved by DFG. Costs for this mitigation are currently estimated at approximately $46,656 for 6.5 ha (16 ac) based on a rate of $2,916 per acre.

Mitigation Measure TES-11: Avoid Impacts on Nesting Special-Status Birds

Special-status birds could establish nests in numerous locations that were not found to be active during initial surveys. Also, construction is expected to span multiple years. Therefore, a qualified biologist will conduct preconstruction surveys each construction year to locate all active nest sites within 0.4 km (0.25 mi) of the construction easement. Direct disturbance, including removal of nest trees and activities in the immediate vicinity of active nests, will be avoided during the breeding season (March through August) where feasible. No-disturbance buffers will be established around each active nest to avoid disturbing nesting birds where feasible. The size and configuration of buffers will be based on the proximity of active nests to

construction, existing disturbance levels, topography, sensitivity of the species, and other factors, and will be established through coordination with DFG representatives on a case-by-case basis. Where it is determined infeasible to schedule construction to avoid constructing within 0.4 km (0.25 mi) of an active nest, the City or its Contractor shall monitor nest status to determine whether construction is disturbing nesting activities. If it is determined by a qualified biologist that the construction is adversely affecting nesting activities, construction activities within 0.4 km (0.25 mi) will cease pending completion of nesting activities.

Western burrowing owls are known to nest in the eastern portion of the project area along the Union House Creek levee. Potential habitat for Western burrowing owl in the west portion of the project area is located along the Morrison Creek levee and along dirt roads in the SRCSD Bufferlands (Jones 2001). Western burrowing owls forage in grassland habitat in the project area. To avoid impacts on western burrowing owl, a biologist will conduct a preconstruction survey for the owls along the proposed alignment plus a 75-m (250-ft) buffer on each side of the construction area. If western burrowing owls are detected in the project area, the following measures will be implemented.

1. Occupied burrows will not be disturbed during the nesting season (February 1 through August 31).
2. When destruction of occupied burrows (outside the nesting season) is unavoidable, existing unsuitable burrows will be enhanced (enlarged or cleared of debris) or new burrows created (by installing artificial burrows) at a ratio of 2:1 on the protected lands site. Newly created burrows will follow guidelines established by DFG.
3. If owls must be moved away from the project area, passive relocation techniques (e.g., installing one-way doors at burrow entrances) will be used rather than trapping. At least 1 week will be necessary to accomplish passive relocation and allow owls to acclimate to alternate burrows.
4. The City will prepare a monitoring plan, and provide long-term management and monitoring of the protected lands. The monitoring plan will specify success criteria, identify remedial measures, and require an annual report to DFG.
5. If avoidance is the preferred method of dealing with potential impacts, no disturbance should occur within 50 m (160 ft) of occupied burrows during the nonbreeding season (September 1 through January 31) and within 75 m (250 ft) during the breeding season. Avoidance also requires that at least 2.6 ha (6.5 ac) of foraging habitat, contiguous with occupied burrow sites, be permanently preserved for each pair of breeding western burrowing owls or single unpaired resident bird. The configuration of the protected site will be submitted to DFG for approval.
6. Compensation measures will follow the guidelines provided in the DFG staff report regarding mitigation of impacts on western burrowing owls (California Department of Fish and Game 1995). The City will compensate for the loss of western burrowing owl foraging habitat and for any occupied burrows that will be destroyed as a result of the proposed action. Before project approval and before construction begins, the City will compensate for the removal of 6.50 ha (16 ac) of western burrowing owl foraging habitat. The estimated cost of

compensation would be covered under the Swainson's hawk mitigation costs as the two species have similar habitat requirements.

3.20.5 Cumulative Impacts

Impact TES 7: Cumulative Loss of Special-Status Vernal Pool Invertebrates, VELB, Giant Garter Snake Habitat, Northwestern Pond Turtle, Swainson's Hawk, and Special-Status Bird Nesting Habitat

Implementation of the proposed action, in combination with other local and regional projects, could contribute to the cumulative loss of special-status vernal pool invertebrates, VELB, giant garter snake habitat, northwestern pond turtle, Swainson's hawk, and special-status bird nesting habitat in the project vicinity. Mitigation has been identified for this effect (TES-1 through TES-11).

3.21 Conclusion

3.21.1 Relationship between Local Short-Term Uses of the Human Environment and the Maintenance and Enhancement of Long-Term Productivity

The Council on Environmental Quality (CEQ) NEPA regulations require that the environmental document include a discussion of the "relationship between short-term uses of man's environment and the maintenance and enhancement of long-term productivity" (40 CFR 1502.16).

The uses of man's environment are described in the cumulative impact analysis for each resource topic contained in Chapter 3. Other long-term commitments not seriously affecting the state of the environment include the use of resources necessary to construct the proposed action, such as gravel, steel, and sand. The long-term benefits of the proposed action include improved traffic mobility within the southerly limits of Sacramento and provision of access to developable land adjacent to I-5.

3.21.2 Any Irreversible and Irretrievable Commitments of Resources Which Would Be Involved in the Proposed Action

The CEQ NEPA regulations require that the environmental document include a discussion of "any irreversible and irretrievable commitments of resources which would be involved in the proposed action" (40 CFR 1502.16).

Implementation of the proposed action would result in an irretrievable commitment of energy and other nonrenewable resources to be used in constructing the proposed action, such as water, gravel, and sand. Irreversible commitments of resources would result from implementing any of the project alternatives. These resources include the following.

- Construction materials
- Labor
- Energy needed for construction, operation, and maintenance
- Land conversion of open space, agricultural, and natural environments

Land used in the construction of the proposed action is also a nonrenewable resource that would be committed to a long-term use. Land uses that would be irreversibly committed include agricultural lands that are used to grow hay crops, annual grasslands, and stream and wetland areas. The loss of these resources that provide habitat for special-status species could be mitigated by compensating for affected habitat as part of the proposed action. The unmitigated conversion of some agricultural lands to nonagricultural uses is considered an irreversible and irretrievable commitment of resources.

3.22 Environmental Commitments

Regulatory requirements enforced by the City and other governmental agencies are measures that are required by law and are not considered mitigation measures. Many of these requirements reduce the impacts of a project to a less-than-significant level (CEQA). The following measures are specific to the proposed action and are referred to in subsequent resource discussions where the measures serve to avoid or minimize impacts; they are not identified as mitigation measures. These regulatory requirements will be incorporated into the project design and will be included in all construction documents (e.g., plans, specifications and estimates). The City shall designate an Environmental Monitor to ensure compliance with the following environmental commitments.

3.22.1 Air Quality Environmental Commitments

1. The project will comply with the City's standard construction practices for reducing dust and other air quality impacts (Sacramento City Code 15.88.090).
2. The project shall provide a plan for approval by the Sacramento Metropolitan Air Quality Management District (SMAQMD) demonstrating that the heavy-duty (> 50 horsepower) off-road vehicles to be used in the construction project, including owned, leased, and subcontractor vehicles, will achieve a project wide fleet-average 20% NOx reduction and 45% particulate reduction compared to the most recent California Air Resources Board (CARB) fleet average at time of construction. Acceptable options for reducing emissions may include use of late model engines, low-emission diesel products, alternative fuels, engine retrofit technology, after-treatment products, and/or other options as they become available.

   The City or its Contractor shall submit to SMAQMD a comprehensive inventory of all off-road construction equipment, equal to or greater than 50 horsepower, that will be used an aggregate of 40 or more hours during any portion of the construction project. The inventory shall include the horsepower rating, engine production year, and projected hours of use or fuel throughput for each piece of equipment. The inventory shall be updated and submitted monthly throughout the duration of the project, except that an inventory shall not be required for any 30-day period in which no construction activity occurs. At least 48 hours prior to the use of subject heavy-duty off-road equipment, the City or its contractor shall provide SMAQMD with the anticipated construction timeline including start date, and name and phone number of the project manager and on-site foreman.

   The SMAQMD requires payment of a fee if construction-related impacts are over the SMAQMD's NOx threshold of significance. Since the project's construction-related NOx emissions would exceed the SMAQMD's 85 pounds per day threshold, the amount of the fee has been calculated and is shown in the following table. Prior to the approval of improvement plans or the issuance of grading permits, the proponent will submit proof that the off-site air quality mitigation fee of $231,720 has been paid to the SMAQMD, and that the construction air quality mitigation plan has been approved by the SMAQMD and the lead agency.

Construction Activity	NOx, lbs/day (unmitigated)	NOx, lbs/day (mitigated)	Exceeds Threshold by	Duration (days)	Total tons	Total Cost (@ $13,600/ton)
Grubbing/Land Clearing	112	89.6	4.6	22	0.1	$688
Grading/Excavation	428	342.4	257.4	132	17.0	$231,042
Draining/Utilities/Sub-grade	81	64.8	0	132	0.0	$0
Paving	67	53.6	0	44	0.0	$0
						$231,730

Note: NO_x daily emission threshold equals 85 pounds per day.

It should be noted that Caltrans cannot concur with any mitigation measure that requires the contractor to use a construction fleet emitting 20 percent lower emissions than the average fleet at the time of construction. In view of Caltrans' obligations under the California Public Contract Code, if this mitigation measure were included as a requirement of the contract, Caltrans would be unable to advertise, award, and administer the contract for this project.

Caltrans recognizes that the City of Sacramento, as project sponsor and CEQA lead agency, has the right to make its own determinations regarding use of the SMAQMD protocol and the mitigation measures designed to reduce NOx and particulates. On the other hand, as a responsible agency, Caltrans must make an independent judgment regarding the adequacy of the lead agency's EIR to support issuance of an encroachment permit authorizing work on the state highway system.

3. The City or its Contractor shall ensure that emissions from all off-road diesel powered equipment used on the project site do not exceed 40% opacity for more than three minutes in any one hour. Any equipment found to exceed 40% opacity (or Ringelmann 2.0) shall be repaired immediately, and SMAQMD shall be notified within 48 hours of identification of non-compliant equipment. A visual survey of all in-operation equipment shall be made at least weekly, and a monthly summary of the visual survey results shall be submitted throughout the duration of the project, except that the monthly summary shall not be required for any 30-day period in which no construction activity occurs. The monthly summary shall include the quantity and type of vehicles surveyed as well as the dates of each survey. The SMAQMD and/or other officials may conduct periodic site inspections to determine compliance. Nothing in this section shall supersede other SMAQMD or state rules or regulations.

4. The City or its Contractor shall incorporate measures that that will reduce emissions of PM10. Any measures that include the use of chemical soil stabilizers, nontoxic binders, hydroseeding, and planting vegetation to reduce dust on the Bufferlands will require the review and approval of the SRCSD Bufferlands staff prior to use. Measures that may be implemented include, but are not limited to:

   a. Use adequate dust control measures that are implemented in a timely and effective manner during all phases of project development and construction.

   b. Water all active construction sites at least twice daily. The frequency of watering should be based on the type of operation, soil, and wind exposure.

   c. Use chemical soil stabilizers on inactive construction areas (disturbed lands within construction projects that are unused for at least four consecutive days).

   d. Limit the speed of on-site vehicles to 15 mph on unpaved roads.

e. Suspend land clearing, grading, earth moving, or excavation activities when winds exceed 20 mph.

f. Apply non-toxic binders (e.g., latex acrylic copolymer) to exposed areas after cut-and-fill operations, and hydroseed the area.

g. Treat constructed slopes with erosion control measures, including planting vegetation cover, after they are completed.

h. Cover inactive storage piles.

i. During initial grading, earth moving, or site preparation, construct a construction entrance similar to the Caltrans Temporary Erosion Control Detail (part of the Caltrans Erosion Control Best Management Practices) where construction equipment leaves paved areas. This detail utilizes a layer of crushed rock at entrances to minimize dust and the tracking of dirt in areas adjacent to the work area.

j. Post a publicly visible sign with the telephone number and person to contact regarding dust complaints. This person will respond and take corrective action within 24 hours. The telephone number of SMAQMD will also be visible to ensure compliance with SMAQMD Rules 401 through 405 (Rule 401 Ringelmann Chart/Opacity; Rule 402 Nuisance; Rule 403 Fugitive Dust; Rule 404 Particulate Matter; and Rule 405 Dust and Condensed Fumes).

k. Before project completion, demonstrate that all ground surfaces are covered or treated sufficiently to minimize fugitive dust emissions.

3.22.2 Geology Environmental Commitments

1. As recommended by Blackburn Consulting, Inc. (BCI) (BCI 2001), design level geotechnical studies will be performed for the planned bridges, and recommendations of the studies will be incorporated as part of the project:

   a. Liquefaction potential shall be evaluated during the design level geotechnical studies for the planned bridges. In addition, measures to mitigate any liquefaction hazards discovered in these studies shall be implemented for all stages of design, construction, and operation of the project.

   b. Scour analysis will be performed to determine the amount of potential scour around bridge support columns; all scour reduction recommendations identified in the analysis shall be implemented to reduce scour potential.

   c. Laboratory testing will be performed and the specific soil corrosion potential evaluated during the design phase of the project. All corrosion reduction recommendations identified in the evaluation will be implemented to avoid corrosion of structural components.

   d. Site specific exploration and laboratory testing will be performed to determine the settlement waiting period for fill settlement relating to the bridge approach fills.

2. Bridge foundation alternatives will be designed to incorporate geotechnical considerations reported by BCI (2001), as follows:
   a. For the new Cosumnes River Boulevard Interchange Bridge at I-5, pre-cast concrete piles will be the best foundation alternative, subject to more detailed field investigation.
   b. For the Union Pacific and Morison Creek Bridge, driven (concrete or steel H-piles) or cast-in-place concrete piles will be acceptable foundation alternatives, subject to more detailed field investigation.
3. Lime-treatment of the subgrade soil will be performed to decrease the pavement thickness and increase the life of the roadway.

3.22.3 Water Quality Environmental Commitments

1. Because project construction will cover an area more than 0.4 ha (1 ac), a SWPPP will be prepared as required by the Central Valley Regional Water Quality Control Board (RWQCB) under the General Construction Permit.
   a. Before the start of construction, a Notice of Intent (NOI) will be filed with the Central Valley RWQCB for coverage under the General Construction Permit, and a Storm Water Pollution Prevention Plan (SWPPP) will be prepared that addresses water quality impacts associated with construction and operation of the proposed action.
   b. The SWPPP will meet the requirements of the Central Valley RWQCB and any City and County requirements, including the City's *Administrative and Technical Procedures Manual for Grading, Erosion, and Sediment Control* (Grading Manual), and the *City's Guidance Manual for On-Site Stormwater Quality Control Measures.* Construction and design of the proposed action will follow the guidelines in these manuals, as is required by the City's Stormwater Quality Improvement Plan (City of Sacramento 2003).
   c. Prior to approval of the SWPPP by the Central Valley RWQCB, the project proponent will provide an opportunity for SRCSD to review and comment on the SWPPP. The objectives of the SWPPP are to identify pollutant sources that could affect the quality of stormwater discharges, implement control practices to reduce pollutants in storm water discharges, and protect receiving water quality.
   d. The SWPPP will identify BMPs to maintain water quality. While data are scarce regarding the effectiveness of the various BMPs suggested above, the expected pollutant removal efficiencies (provided in Table 3.11-1 in Chapter 3 of this document) suggest that multiple BMPs used in combination, properly installed and maintained, can achieve nearly 100% sediment removal. Therefore, multiple BMPs should be selected to achieve this result. The final selection and design of erosion and sediment controls will be subject to approval by the City. Although 100% contaminant removal is often not feasible, the final selection and design of Best Management Practices (BMPs) will provide maximum contaminant removal, represent the best available technology that is economically achievable, and explicitly identify the expected level of effectiveness at contaminant removal. BMPs may include but are not limited to the following.

i. Temporary erosion control measures (e.g., silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, geofabric, sandbag dikes, and temporary revegetation or other ground cover) will be employed for disturbed areas.

ii. Earthen dikes, drainage swales, and ditches will be provided to intercept, divert, and convey surface runoff and sheet flow, prevent erosion, and reduce pollutant loading. Specific areas that may need such measures will be identified on the construction drawings.

iii. Sweep dirt and debris from streets in the construction zone on a regular basis, particularly before predicted rainfall events.

iv. Existing vegetation along Morrison Creek will be preserved to the extent feasible for erosion and sediment control.

v. Establish grass or other vegetative cover over areas that have been disturbed by construction as soon as possible after disturbance to establish a permanent perennial vegetative cover to reduce erosion by slowing runoff velocities, enhancing infiltration and transpiration, trapping sediment and other particulates, and protecting soil from raindrop impact. All seed mixes intended to be used on SRCSD property will be reviewed and approved by SRCSD Bufferlands staff prior to use. At minimum, vegetative application will be done by September 15 to allow for plant establishment. No disturbed surfaces will be left without erosion control measures in place during the typical rainy season in the Sacramento Valley of October 1 to April 30.

vi. A specified work schedule will be provided to coordinate the timing of land-disturbing activities and installation of erosion and sedimentation control practices to reduce onsite erosion and offsite sedimentation (e.g., construction in the active flow channels would be limited to the low-flow seasons).

vii. A monitoring program will be implemented by the City or its contractor to verify BMP effectiveness. At least once each week, BMPs will be inspected visually. If the BMPs are not meeting the identified performance standard, the BMPs will be redesigned or new BMPs will be implemented to achieve this result. The monitoring program will begin at the outset of construction and terminate on completion of the proposed action.

viii. Additionally, all contractors will be required to participate in education, coordinated by Bufferlands staff, on how Morrison Creek water is utilized downstream of the project area by SRCSD staff at the Upper Beach Lake wetland complex.

2. As part of obtaining coverage under the General Construction Permit, the City or its contractor will develop and implement a spill prevention and control program to minimize the potential for and effects from spills of hazardous, toxic, or petroleum substances during construction of the proposed action.

   a. The plan shall be completed before any construction activities begin and shall include provisions for preventing, containing, and reporting spills of hazardous materials.

   b. The federal reportable spill quantity for petroleum products, as defined in 40 CFR 110, is any oil spill that (1) violates applicable water quality standards, (2) causes a film or sheen

on or discoloration of the water surface or adjoining shoreline, or (3) causes a sludge or emulsion to be deposited beneath the surface of the water or adjoining shorelines.

c. If a spill is reportable, the contractor would be responsible for notifying the County Department of Environmental Management and California Department of Toxic Substances Control (DTSC), which have spill response and cleanup ordinances to govern emergency spill response.

d. A written description of reportable releases must be submitted to the Central Valley RWQCB. This submittal must include a description of the release, including the type of material and an estimate of the amount spilled; date of the release; explanation of why the spill occurred; and description of the steps taken to prevent and control future releases. The releases will be documented on a spill report form.

e. All spills, including those that do not reach "reportable" levels, will be reported to the SRCSD Bufferlands staff. These reports will include substance type, size of spill, and exact location of spill.

3. Provisions for Dewatering:

a. If feasible, wastewater generated as a part of construction dewatering will be returned to the aquifer through infiltration basins or other means.

b. If discharge to surface waters is unavoidable, before engaging in construction-related dewatering activities, the City or its contractor shall obtain a National Pollutant Discharge Elimination System (NPDES) permit and Waste Discharge Requirements (WDRs) from the Central Valley RWQCB.

c. Depending on the volume and characteristics of the discharge, coverage under the General Construction Permit is possible. If dewatering discharges are of a nature that would not allow coverage under the General Construction Permit, coverage under other applicable general permits may be obtained. These permits will contain numerical and narrative limits that are sufficiently protective of water quality such that impacts to surface water or groundwater as a result of dewatering effluent would be below significance thresholds.

d. In a worst-case scenario, the City or its contractor would need to obtain an individual NPDES permit for dewatering discharges, which would also contain standards such that water quality is not degraded.

e. During dewatering activities, all permit conditions will be followed, including the design and implementation of measures to meet permit conditions, such as retention of dewatering effluent until all particulate matter has settled before it is discharged, use of infiltration areas, and other BMPs.

f. Final selection of water quality control measures will be subject to approval by the Central Valley RWQCB.

g. The City will verify that an NOI has been filed before allowing dewatering to begin.

h. The City or its contractor will routinely inspect the dewatering site to verify that measures specified in the permit are properly implemented and conduct visual inspections of effluent to verify quality before the effluent is discharged. Inspections will

include verification that the effluent is not discolored and does not exhibit sheens or films, which indicate the presence of contaminants other than sediment. If it is determined during the permitting process that there is reasonable potential for contaminants in addition to sediment to be found in dewatered effluent, the City or its contractor will take samples and conduct laboratory analyses for these constituents as part of the monitoring regime. For ongoing dewatering activities, monitoring will be performed at least biweekly.

i. The City will immediately notify the contractor if there is a noncompliance issue and will require compliance.

3.22.4 Land Use Environmental Commitments

1. As noted above in the section titled "Construction Access", the City or its Contractor will ensure that access across I-5 will be maintained throughout the project by phasing construction of the interchange. SRCSD staff, emergency vehicles, and Park Ranger patrols would have access across I-5 throughout the construction period. Maintaining this access would also provide an avenue of access for the landowner or his/her lessee.
2. The City will ensure that the project corridor along the Bufferlands will be fenced and posted to limit trespass onto the Bufferlands. Fencing and signage will also be used to avoid impacts on SRCSD leased grazing and farming operations. The type and location of fencing and signage will be approved by the SRCSD Bufferlands staff prior to installation.

3.22.5 Hazards and Hazardous Materials Environmental Commitments

1. The City's Contractor will prepare plans to prevent the pollution of surface water and groundwater and to promote the health and safety of workers and other people in the project vicinity (in addition to the SWPPP required for hydrology impacts).
   a. These programs will include an operations and maintenance plan and a site-specific safety plan, approved by the California Occupational Safety and Health Administration (Cal OSHA).
   b. A fire safety and prevention plan, approved by the local fire department.
2. The City's Contractor will develop and implement a hazardous materials management plan that addresses public health and safety issues by providing safety measures, including release prevention measures; employee training, notification, and evacuation procedures; and adequate emergency response protocols and cleanup procedures.
3. The City's Contractor will comply with Cal OSHA as well as federal standards for the storage and handling of fuels, flammable materials, and common construction-related hazardous materials and for fire prevention. Cal OSHA requirements can be found in the California Labor Code, Division 5, Chapter 2.5. Federal standards can be found in Occupational Safety and Health Administration Regulations, Standards—29 CFR.

Chapter 4 California Environmental Quality Act Evaluation

4.1 Introduction

This chapter constitutes the CEQA impact evaluation for this project (see Chapter 3 for the NEPA evaluation). Determining and documenting whether a project may have a significant effect on the environment plays a critical role in the CEQA process. CEQA requires lead agencies to know what constitutes a significant effect on the environment and whether mitigation measures are available to reduce a significant effect to a less-than-significant level. CEQA also requires mitigation of all significant effects on the environment to the extent feasible.

This chapter identifies the environmental impacts of the project, recommends mitigation needed to avoid or reduce impacts, and describes the pre-mitigation and post-mitigation significance conclusions for each environmental impact.

The reader should refer to the "Affected Environment" subsections in Chapter 3 for a discussion of the setting for each environmental issue and to the "Approach and Methodology" subsections in Chapter 3 for a description of the impact methodologies used for each environmental issue. The "Environmental Impacts" sections of this chapter assess the potential environmental effects that could occur with project implementation. Each impact is given a letter/number designation (e.g., Impact TR-1, which designates the first impact identified under the topic of "Transportation/Circulation") and an impact title. One or more mitigation measures are identified for each significant environmental impact that would avoid or reduce the impact. These measures are also given a letter/number designation that corresponds with the impact nomenclature (e.g., Mitigation Measure TR-1, which designates the first mitigation measure identified under the topic of "Transportation/Circulation") and a title.

4.2 Determining Significance under CEQA

As noted in the Summary and in the introduction to Chapter 3, differences exist in the way impacts are addressed in CEQA versus NEPA documents. While CEQA requires that environmental documents judge the significance of individual environmental impacts, NEPA uses the term "significance" only to determine the type of environmental document to be prepared. Federal and state lead agencies can also use different thresholds for determining the need for mitigation. For the purpose of the impact discussions in this chapter, significance conclusions are provided in the context of CEQA only.

4.3 Discussion of Significant Impacts

The City prepared and distributed a NOP and a CEQA initial study (IS) checklist on February 20, 2002 (Appendix A). This EIS/EIR includes a discussion of specific issues and concerns

identified by the City as potentially significant or less than significant in the initial study checklist.

The CEQA initial study checklist contained in Appendix A identifies that the proposed project would have no impact on the following environmental issues:

- Energy and mineral resources
- Recreation

Because, as noted above, the IS checklist explains why these impacts are not treated in detail in this EIR, the checklist satisfies the requirements of State CEQA Guidelines Section 15128, which requires that an EIR "shall contain a statement briefly indicating the reasons that various possible significant effects of a project were determined not to be significant and were therefore not discussed in detail in the EIR."

The CEQA IS checklist identifies that the proposed project potentially could have an impact on the following environmental issues:

- Population and housing
- Geological problems
- Water
- Air quality
- Transportation/circulation
- Biological resources
- Hazards
- Noise
- Public services and utilities
- Aesthetics
- Cultural resources

The proposed project is also evaluated for consistency with local plans and policies. The City of Sacramento General Plan Update EIR (City of Sacramento 1987), when certified, included overrides for many issues, including land use. Because this project is consistent with the general plan, the cumulative impacts would be no worse than those identified by the General Plan Update EIR.

4.4 Land Use and Planning

See the "3.2, Land Use" and "3.4, Farmlands and Agriculture" environmental setting sections in Chapter 3 for a discussion of existing major land uses and relevant plans and policies.

4.4.1 CEQA Impacts

Refer to the associated "Approach and Methodology" subsections in Chapter 3 for a description of the methods used to evaluate impacts.

4.4.2 Standards of Significance

The proposed action would have a significant impact if it would:

- Result in a substantial alteration of the present or planned use of an area
- Convert prime farmland, unique farmland or Farmland of Statewide Importance as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring program of the California Resources Agency, to non-agricultural use
- Conflict with existing zoning for agricultural use, or a Williamson Act contract

4.4.3 Land Use and Planning Impacts

Build Alternative A: Franklin to Freeport North Alignment

Impact AG-1: Inconsistency with City and County Agriculture Goals and Policies

This alternative would directly convert 9.59 ha (23.7 ac) of prime and unique farmland, 8.54 ha (21.1 ac) of farmland of statewide or local importance, and 2.41 ha (5.96 ac) of other farmland to nonagricultural use in the county. It would indirectly convert 3.6 ha (8.90 ac) of prime farmland, unique farmland, and farmland of statewide or local importance. (Refer to Table 3.4-1, in Chapter 3, Section 3.4, "Farmland and Agriculture," which identifies the quality and quantity of affected farmland for each alternative.)

The County General Plan agriculture policies are intended to protect prime farmlands and lands with intensive agricultural investments from conversion. However, all of the prime farmland, unique farmland, and farmland of statewide or local importance that would be converted under this alternative has been designated for urban development in the City General Plan since 1988. The lands have also been identified in the County General Plan as planned for low-density residential, commercial and offices, and intensive industrial land uses. Also, the other farmland that would be converted does not have intensive agricultural investments. Because these farmlands have been designated for urban development in both the City and County General Plans, they are not included in the prime farmland that is intended for protection from conversion by the County General Plan agriculture policies. Therefore, conversion of this land is consistent with these policies. This impact would be considered less than significant. No mitigation is required.

Impact AG-2: Direct Conversion of Farmland to Nonagricultural Uses
Construction of this alternative would result in the removal of approximately 20.54 ha (50.76 ac) of farmland from production. This amount includes 9.59 ha (23.7 ac) of prime and unique farmland, 8.54 ha (21.1 ac) of farmland of statewide and local importance, and 2.41 ha (5.96 ac) of other farmland. The amount of prime farmland, unique farmland, and farmland of statewide or local importance that will be converted to nonagricultural uses is less than 0.02% of the total acreage of such farmland in the county. This agricultural land would be located along the roadway corridor, within 61 m (200 ft) north and south of the centerline. The FCIR form for this alternative gives a site assessment value of 31 points. The maximum value for relative value of farmland is 100 points, as mentioned above. Combining 31 and 100 gives a total value of 131. This impact would be considered less than significant. No mitigation is required.

Impact AG-3: Indirect Conversion of Farmland to Nonagricultural Uses
The farmlands that would be affected by this alternative are surrounded by urban uses, not close to strong agricultural infrastructure. The FCIR form indicates that this alternative would indirectly convert 3.6 ha (8.9 ac) of prime farmland, unique farmland, and farmland of statewide or local importance to nonagricultural uses. The amount of land converted would be less than 0.01% of the total acreage of such farmland in the county. As stated previously, the total score for the site was 131 on the FCIR form. This permanent, indirect impact would be considered less than significant. No mitigation is required.

Build Alternative B: Franklin to Freeport South Alignment

Impact AG-1: Inconsistency with City and County Agriculture Goals and Policies
This alternative would directly convert 12.25 ha (30.27 ac) of prime and unique farmland, 8.19 ha (20.23 ac) of farmland of statewide and local importance, and 2.41 ha (5.96 ac) of other farmland to nonagricultural use in the county. It would indirectly convert 3.6 ha (8.90 ac) of prime farmland, unique farmland, and farmland of statewide or local importance. (Refer to Table 3.4-1, in Chapter 3, Section 3.4, "Farmland and Agriculture," which identifies the quality and quantity of affected farmland for each alternative.)

The County General Plan agriculture policies are intended to protect prime farmlands and lands with intensive agricultural investments from conversion. However, all of the prime farmland, unique farmland, and farmland of statewide or local importance that would be converted under this alternative has been designated for urban development in the City General Plan since 1988. The lands have also been identified in the County General Plan as planned for low density residential, commercial and offices, and intensive industrial land uses. Because these farmlands have been designated for urban development in both the City and County General Plans, they are not included in the prime farmland that is intended for protection from conversion by the County General Plan agriculture policies. Also, the other lands that would be converted do not have intensive agricultural investments. Therefore, conversion of this land is consistent with these policies. This impact would be considered less than significant. No mitigation is required.

Impact AG-2: Direct Conversion of Farmland to Nonagricultural Uses
Construction of this alternative would result in the removal of approximately 22.85 ha (56.46 ac) of farmland from production. This amount includes 12.25 ha (30.27 ac) of prime and unique farmland, 8.19 ha (20.23 ac) of farmland of statewide and local importance, and 2.41 ha (5.96 ac) of other farmland. The amount of prime farmland, unique farmland, and farmland of statewide or

local importance that would be converted to nonagricultural uses is less than 0.02% of the total acreage of such farmland in the county. This agricultural land would be located along the roadway corridor, within 61 m (200 ft) to the north and south of the centerline. The FCIR form for this alternative gives a site assessment value of 31 points. The maximum value for relative value of farmland is 100 points, as mentioned above. Combining 31 and 100 gives a total value of 131. This impact would be considered less than significant. No mitigation is required.

Impact AG-3: Indirect Conversion of Farmland to Nonagricultural Uses

The farmlands that would be affected by this alternative are surrounded by urban uses, not close to strong agricultural infrastructure. The FCIR form indicates that this alternative would indirectly convert 3.6 ha (8.90 ac) of prime farmland, unique farmland, and farmland of statewide or local importance to nonagricultural uses. This impact would be a permanent impact. The amount of land converted would be less than 0.01% of the total acreage of such farmland in the County. As stated previously, the total score of the site was 131 on the FCIR form. This impact would be considered less than significant. No mitigation is required.

No Build Alternative (No Project)

The No-Build Alternative will not result in the removal of any farmland from production resulting from construction of the proposed roadway; therefore, it is consistent with County agriculture goals and policies. No impact would occur.

4.4.4 Land Use and Planning Avoidance, Minimization, and Mitigation Measures

No mitigation is required.

4.4.5 Land Use and Planning Impacts

Impact AG-4: Cumulative Conversion of Vacant/Agricultural Land to Urban Uses

The City of Sacramento General Plan Update EIR (City of Sacramento 1987) indicates that several cumulative impacts on land use, including vacant/agricultural land, would occur with implementation of the City General Plan. The proposed action has been identified in the City General Plan and would contribute incrementally to the cumulative land use impacts identified in the EIR. The EIR identifies three potentially adverse cumulative impacts:

1. Build-out of most vacant/agricultural land. Provides for 34,465 acres of residential uses; 14,087 acres of employment-generating uses; 14,371 acres of parks, schools, other public uses, and roads; and 190 acres of vacant/agricultural land.

2. Conversion of 21,871 acres of vacant/agricultural land to urban uses, including about 9,700 acres of prime agricultural land (7,500 of which are currently irrigated). Encroachment on surrounding agricultural operations.

3. Development of the following new land uses: residential (10,954 acres); commercial (655 acres); office (1,449 acres); heavy commercial and warehouse (2,573 acres); industrial (2,899 acres); park, recreation, and open space (2,312 acres); schools (413 acres); transportation and utilities (55 acres); public, quasi-public, and miscellaneous (559 acres).

The following mitigation measures were identified by the EIR to reduce the cumulative impacts (level of reduction not stated).

Establish a development phasing program.

Work with adjacent counties to develop an agricultural preservation plan.

Buffer residential uses from adjacent regional commercial, office, heavy commercial, and warehouse and industrial uses.

Conduct further study of identified land use issues.

Adopt airport overlay zones.

The EIR further states that the cumulative impact of converting agricultural land to urban uses is "unavoidably adverse" and that no mitigation is available to reduce the cumulative impact to a less-than-significant level. Phasing of development is suggested to provide partial mitigation. Conversion of farmlands that would occur with implementation of the proposed project would add to the cumulative impact stated above. No mitigation is available to reduce the impact; therefore, the impact would be considered significant and unavoidable.

4.4.6 Findings

Impact	Significance Level	Significance Level after Mitigation
Impact AG-1: Inconsistency with City and County Agriculture Goals and Policies	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*
Impact AG-2: Direct Conversion of Farmland to Nonagricultural Uses	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*
Impact AG-3: Indirect Conversion of Farmland to Nonagricultural Uses	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*
Impact AG-4: Cumulative Conversion of Vacant/Agricultural Land to Urban Uses	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: none*	*Build Alternative A: SU* *Build Alternative B: SU* *No Build Alternative: none*

Notes: S = significant.
LTS = less than significant.
SU = significant and unavoidable.

4.5 Population and Housing

See the "3.3 Growth," "3.5 Community Impacts - Community Character and Cohesion," and "Community Impacts - Environmental Justice" environmental setting sections in Chapter 3 for a discussion of existing population and housing conditions and relevant plans and policies.

4.5.1 CEQA Impacts

Refer to the associated "Approach and Methodology" subsections in Chapter 3 for a description of the methods used to evaluate impacts.

4.5.2 Standards of Significance

The proposed action would have a significant impact if it would:

- Induce substantial growth in an area either directly or indirectly (e.g., through projects in an undeveloped area or extension of major infrastructure)
- Displace existing housing, especially affordable housing
- Physically or psychologically divide a community
- Displace a substantial number of people, necessitating the construction of replacement housing elsewhere

4.5.3 Population and Housing Impacts

Build Alternative A: Franklin to Freeport North Alignment

Impact G-1: Induce Growth in Sacramento, Freeport, or Unincorporated Sacramento County

This alternative would improve circulation between SR 99 and I-5, improve access to I-5 from Freeport, and improve accessibility to developable land in southern Sacramento and the City's sphere of influence. By substantially improving access to the freeway system, this alternative would accommodate planned growth in the industrially zoned area adjacent to I-5 and in residentially zoned area in the center of the project area. This alternative does not provide capacity beyond that needed to accommodate planned growth consistent with the City and County General Plans. Therefore, it would not induce unplanned growth.

Future growth in the project area between Franklin Boulevard and Freeport Boulevard that would be indirectly accommodated by this alternative would be subject to growth controls maintained by the City. Zoning changes, tentative subdivision maps, and other zoning approvals, which would involve environmental documentation, public notification and involvement, mitigation, and approval by local agencies, would be required to accommodate such growth. This accommodation of the planned growth of the community would be an indirect, permanent effect. However, because the project area has long been identified for future urbanization, the City has planned for accommodating the resulting public services, utilities, and infrastructure needs. This impact would be considered less than significant. No mitigation is required.

Impact C/R-1: Displacement of Existing Businesses or Housing

This alternative would be constructed on primarily vacant land, and would not displace any residences or businesses. No impact would occur.

Impact C/R-2: Creation of Temporary Jobs during Construction

The construction of this alternative would generate temporary economic activity in the county and region, including purchases of goods and services required for construction and employment of workers needed for construction. This increased economic activity would prompt secondary economic activity as construction-related revenue and employee income are spent in sectors throughout the regional economy. The extent of the economic effect of construction-related expenditures on the county economy would depend on the proportion of construction expenditures that would occur in the local and regional area and on the residential location of people employed by construction contractors. The employment and income effects generated by construction activities would extend through the construction period. This impact would be beneficial but temporary and would be considered less than significant. No mitigation is required.

Impact C/N-1: Physical or Psychological Division of a Community

There are several cohesive communities around the project area, but the project area itself is almost entirely vacant land, including the SRCSD Bufferlands. As such, this alternative would not create a barrier that would divide a cohesive community east of I-5. On the west side of I-5, this alternative would connect Freeport Boulevard with I-5. Although this connection would change the physical attributes of the area, it would not create a physical or psychological barrier. The town of Freeport is located within a very narrow north-south corridor along Freeport Boulevard, so an east-west roadway that dead-ends into Freeport would not impede the ability of residents to travel within the community or disrupt the status of Freeport Boulevard as the primary connection. This impact would be considered less than significant. No mitigation is required.

Impact C/N-2: Alter the Community Character of the Freeport Community

The proposed project may alter the existing character of the Freeport community. Currently the Freeport community consists mainly of small, locally owned businesses as well as residences. Because the proposed project create a connection to Freeport Boulevard, an increase in development in the Freeport community may follow, which may include businesses that change the character of the community to a more urbanized style. Determining what development would be likely in the future would be speculative and is not be addressed in this environmental document. Any developments proposed in the future would be required to go through environmental review processes by the appropriate local agencies, which would address impacts. This impact would be considered less than significant. No mitigation is required.

Build Alternative B: Franklin to Freeport South Alignment

The population and employment impacts under this alternative would be the same as those described for Build Alternative A.

No-Build Alternative (No Project)

Because there would be no roadway or interchange constructed under the No-Build Alternative, there would be no displacement or creation of local jobs nor effects on community cohesion or

alterations in the community character in the vicinity of the project area. The City has identified the southwest area of Sacramento as a potential growth area for more than 20 years, but development has not yet occurred. Planned growth likely would occur eventually if this alternative is selected, but without the impetus of freeway access. No impact would occur.

4.5.4 Population and Housing Avoidance, Minimization and Mitigation Measures

No mitigation measures are required.

4.5.5 Cumulative Population and Housing Impacts

The southeastern tier of Sacramento north of the SRCSD Bufferlands has long been proposed for development. The proposed action has been identified in the City general plan and community plan and would contribute incrementally to the cumulative land use impacts identified in the general plan EIR. However, because the project area has long been identified for future urbanization, the City has planned for accommodating the resulting public services, utilities, and infrastructure needs. None of the alternatives would displace any residences, people, or businesses. Therefore, the proposed action would not contribute to any cumulative displacement impacts that may occur as a result of the combination of other projects in the area. Effects related to generation of employment would be minor and temporary. Although the loss of some portion of the local tax base would occur from acquisition of right-of-way for the project, the loss would not be substantial.

4.5.6 Findings

Impact	Significance Level	Significance Level after Mitigation
Impact G-1: Induce Growth in Sacramento, Freeport, or Unincorporated Sacramento County	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*
Impact C/R-1: Displacement of Existing Businesses or Housing	*Build Alternative A: none* *Build Alternative B: none* *No Build Alternative: none*	*Build Alternative A: none* *Build Alternative B: none* *No Build Alternative: none*
Impact C/R-2: Creation of Temporary Jobs during Construction	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*
Impact C/N-1: Physical or Psychological Division of a Community	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*
Impact C/N-2: Alter the Community Character of the Freeport Community	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*

Notes: S = significant.
LTS = less than significant.
SU = significant and unavoidable.

4.6 Geological Problems

See the "3.12 Geology/Soils/Seismicity, and Paleontological" environmental setting section in Chapter 3 for a discussion of existing major land uses and relevant plans and policies.

4.6.1 CEQA Impacts

Refer to the associated "Approach and Methodology" subsections in Chapter 3 for a description of the methods used to evaluate impacts.

4.6.2 Standards of Significance

The proposed action would have a significant impact if it would result in or expose people to potential impacts involving:

- Seismic hazards
- Erosion, changes in topography or unstable soil conditions
- Subsidence of land (groundwater pumping or dewatering)
- Unique geologic or physical features

4.6.3 Geology Impacts

Build Alternative A: Franklin to Freeport North Alignment

Impact GEO-1: Potential Structural Damage and Injury from Fault Rupture

The project area is not located in an Alquist-Priolo Special Studies Zone. According to the preliminary geologic assessment by BCI (2001), no known faults cross the project site, with the closest known fault the Coast Ranges-Sierran Block Boundary Seismic Zone, 37.0 km (23 mi) to the west of the site. There would be no impact.

Impact GEO-2: Potential Structural Damage and Injury from Ground Shaking

An earthquake generated along regional faults could cause ground shaking in the project area. Based on the anticipated ground acceleration at the site (approximately 0.2 g), the level of this hazard is anticipated to be relatively low. However, structures not designed and constructed according to seismic safety standards are more susceptible to damage (and, subsequently, to increased risk of injury to persons) than structures built in accordance with Caltrans standards. All project structures would conform to the latest Caltrans standards, which establish requirements for seismic safety of all structures. This impact would be considered less than significant. No mitigation is required.

Impact GEO-3: Potential Structural Damage and Injury from Liquefaction and Related Hazards

Because of the relatively high groundwater levels and possibility of relatively loose sand layers in the upper 15.2 m (50 ft), there is a possibility that liquefaction and related hazards could occur at the site. The City has committed to implement measures to address liquefaction hazards (see

the Section 3.22.2, "Geology Environmental Commitments"). This impact would be considered less than significant. No mitigation is required.

Impact GEO-4: Potential Accelerated Erosion from Grading Activities

Implementation of the project would result in construction activities involving grading and removal of vegetative cover, which could cause increased wind and water erosion rates. Additionally, construction activities may compact the soil, increasing runoff and decreasing the revegetation potential. Grading of the soil to form the steep slopes of the bridge approaches will increase their erosion hazard. This impact is both short-term (construction related) and long-term (runoff and decreased revegetation potential). Implementation of a Storm Water Pollution Prevention Plan (SWPPP), along with implementation of the City's Erosion and Sediment Control Ordinance (Ordinance 93-068, Section 15.88 of the City Code) and the measures already committed to by the City (see Section 3.22.2, "Geology Environmental Commitments") would ensure that no impact would occur.

Impact GEO-5: Settlement of Bridge Approach Fill Material

BCI anticipates the thickness of the fill material for the bridge approaches will range from approximately 6.1 to 12.2 m (20 to 40 ft) in height. Because the underlying soils consists of stiff to hard silt and clay and medium dense silty sand, it is likely that the majority of the settlement will occur during construction, and that waiting periods (if any) will be less than about 30 days. However, without testing, it is not possible to determine the necessary waiting period for settlement. This impact would be short-term. However, the project City has committed to implement measures to prevent excessive fill settlement (see Section 3.22.2, "Geology Environmental Commitments"). This impact would be considered less than significant. No mitigation is required.

Impact GEO-6: Potential Scour at Bridge Supports

The soil surrounding bridge supports located in the area between Morrison Creek and the Union Pacific Rail Road tracks may be subject to potential scour from streamflow, thereby jeopardizing the integrity of the bridge. This impact is long-term. However, the City has committed to implement measures to prevent scour (see Section 3.22.2, "Geology Environmental Commitments"). This impact would be considered less than significant. No mitigation is required.

Impact GEO-7: Corrosion of Concrete and Steel Structural Components

As shown in Table 3.12-1 in Chapter 3, soils in the area have a moderate to high potential to corrode concrete and uncoated steel structural components, such as culverts and foundations, unless measures are implemented to avoid such a hazard. This impact is long-term. However, the City has committed to implement measures to address soil corrosivity (see Section 3.22.2, "Geology Environmental Commitments"). The impact would be considered less than significant. No mitigation is required.

Impact GEO-8: Damage to Structural Components from Expansive Soils

As shown in Table 3.12-1 in Chapter 3, soils in the area have a moderate to high expansion-contraction potential. Seasonal changes in soil moisture content could cause the soils to expand to the point that structures crack or fail, unless measures were implemented to avoid such a hazard. This impact is long-term. However, Caltrans standards will require that the project

components are designed and constructed so as to withstand the effects of expansive soils. The City has committed to implement such measures as lime treatment of the soils to reduce the degree of expansion and contraction (see Section 3.22.2, "Geology Environmental Commitments"). This impact would be considered less than significant. No mitigation is required.

Build Alternative B: Franklin to Freeport South Alignment

The geology impacts under this alternative would be the same as those described for Build Alternative A.

No Build Alternative (No Project)

The No Build Alternative would not locate structures in potentially hazardous locations because no structures would be built. Accelerated erosion, scour, soil corrosion, and approach fill settlement would not be a concern under this alternative because the environment would not be altered.

4.6.4 Geology Avoidance, Minimization and Mitigation Measures

No mitigation is required.

4.6.5 Cumulative Geology Impacts

Impact GEO-9: Cumulative Increased Sedimentation of Receiving Waters

Construction in the project area could lead to an increased sediment load to receiving waters, including the Sacramento River. However, soil erosion hazards are generally slight within the project corridor as well as in the surrounding area (Tugel 1993) where other proposed projects might be constructed in the future. This low erosion hazard, combined with the City's Erosion and Sediment Control Ordinance (93-068), would ensure that cumulative sedimentation impacts are less than significant. No mitigation is required.

4.6.6 Findings

Impact	Significance Level	Significance Level after Mitigation
Impact GEO-1: Potential Structural Damage and Injury from Fault Rupture	*Build Alternative A: none* *Build Alternative B: none* *No Build Alternative: none*	*Build Alternative A: none* *Build Alternative B: none* *No Build Alternative: none*
Impact GEO-2: Potential Structural Damage and Injury from Ground Shaking	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*
Impact GEO-3: Potential Structural Damage and Injury from Liquefaction and Related Hazards	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*
Impact GEO-4: Potential Accelerated Erosion from Grading Activities	*Build Alternative A: none* *Build Alternative B: none* *No Build Alternative: none*	*Build Alternative A: none* *Build Alternative B: none* *No Build Alternative: none*
Impact GEO-5: Settlement of Bridge Approach Fill Material	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*
Impact GEO-6: Potential Scour at Bridge Supports	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*
Impact GEO-7: Corrosion of Concrete and Steel Structural Components	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*
Impact GEO-8: Damage to Structural Components from Expansive Soils	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*
Impact GEO-9: Cumulative Increased Sedimentation of Receiving Waters	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*

Notes: S = significant.
LTS = less than significant.
SU = significant and unavoidable.

4.7 Water

See the "Hydrology and Floodplains" and "Water Quality and Stormwater Runoff" environmental setting sections in Chapter 3 for a discussion of existing major land uses and relevant plans and policies.

4.7.1 CEQA Impacts

Refer to the associated "Approach and Methodology" subsections in Chapter 3 for a description of the methods used to evaluate impacts.

4.7.2 Standards of Significance

The proposed action would have a significant impact if it would result in or expose people to potential impacts involving:

- Changes in absorption rates, drainage patterns, or the rate and amount of surface runoff
- Exposure of people or property to water related hazards such as flooding
- Discharge into surface waters or other alteration of surface water quality (e.g., temperature, dissolved oxygen or turbidity)
- Changes in currents, or the course or direction of water movements
- Change in the quantity of ground waters, either through direct additions or withdrawal, or through interception of an aquifer by cuts or excavations or through substantial loss of groundwater recharge capability
- Altered direction or rate of flow of groundwater
- Impacts on groundwater quality

4.7.3 Hydrology Impacts

Build Alternative A: Franklin to Freeport North Alignment

Impact HYD-1: Increases in the Volume of Surface Runoff during Operation

The project area currently contains large amounts of open areas with pervious surfaces. Implementation of this alternative would result in the construction of impervious surfaces associated with the extension of the roadway, thereby preventing precipitation from infiltrating, causing it to pond or runoff. Development could therefore potentially increase runoff, causing flooding on site or contributing to a cumulative flooding impact downstream. In addition, the site runoff may be discharged more efficiently, decreasing the time it takes to reach downstream facilities and altering the existing peak flood timing.

The results of the preliminary hydrology report and impacts analysis report (Civil Solutions 2002) show that net water surface elevation increases in affected surface waters would be less than 0.6 cm (0.02 ft) for all storm events, and reduced by 0.3 cm (0.01 ft) during 100-year and 25-year storm events. Increases are projected to occur primarily between the confluence of

Morrison and Union House Creeks and Franklin Boulevard. Displacement of 100-year flood storage volume would occur as a result of the installation of the bridge support columns over Morrison Creek. The report estimates approximately 40 af of volume would be displaced. However, this displacement is negligible considering the limitations of the analysis methodologies, the abundance of existing flood storage in the project area, and the accuracy of the base mapping.

This alternative would change adsorption rates, the rate and amount of surface runoff, and potentially expose people or property to flooding hazards as a result of displacement of flood storage capacity. This permanent direct impact would be considered significant. Implementation of Mitigation Measure HYD-1 would reduce this impact to a less-than-significant level.

Impact HYD-2: Changes in Drainage Patterns during Construction

During the construction phase for the bridge crossing Morrison Creek and the UPRR line, some dewatering of Morrison Creek may be necessary. The proposed structure crossing above grade would consist of six pier lines, each with four 1.7-m-diameter (5.6-ft-diameter) columns for support. The placement of these columns would require temporary and partial dewatering of the creek to set them into place. Once the columns have been set into place, the creek channel will be restored to its original flow level and width.

Although this dewatering would change drainage patterns, currents, and the course and direction of water movements, these effects would be short-term. This impact would be considered less than significant. No mitigation is required.

Impact HYD-3: Changes in Drainage Patterns during Operation

The project area is currently undeveloped, and surface water runoff follows natural watershed swale patterns. The proposed roadway would cross these swales and potentially interrupt the natural flow of surface water runoff. However, this alternative would include installation of culverts where the roadway crosses each swale that would permit natural runoff patterns to continue unimpeded. This design would result in no permanent changes in drainage patterns.

The operation of this roadway under this alternative would not cause changes in the existing drainage patterns. This impact would be considered less than significant. No mitigation is required.

Impact HYD-4: Changes in Groundwater Quantity during Construction

Most of this alternative would occur in areas at which the water table is 9.1 m (30 ft) or more below the ground surface. As a result, excavation would not be anticipated to encounter groundwater. However, during construction of the bridge crossing Morrison Creek and the UPRR line, excavation may occur in areas of high groundwater and require dewatering. Dewatering could deplete local groundwater supplies.

Construction could have impacts on the quantity of groundwater through interception of an aquifer by excavations and direct withdrawals. This temporary direct impact would be considered significant. Implementation of Mitigation Measure HYD-2 would reduce this impact to a less-than-significant level.

Impact HYD-5: Changes in Groundwater Quantity during Operation

Most of the project area does not overlie any identified groundwater recharge areas, although a small portion of the project area falls within the groundwater recharge zone at the Sacramento River. However, the total area of this recharge zone that would be covered with impervious surface by this alternative would be very small and would have little effect on groundwater recharge capacity. In addition, this alternative would not use water for operations. The operation of this alternative is not expected to affect changes in the quantity of groundwater, either through direct addition or withdrawal. This impact would be considered less than significant. No mitigation is required.

Build Alternative B: Franklin to Freeport South Alignment

The impacts under this alternative would be the same as those described for Build Alternative A.

No Build Alternative

Under this alternative, no action would be taken, and baseline conditions would continue.

4.7.4 Hydrology Avoidance, Minimization and Mitigation Measures

Mitigation Measure HYD-1: Prepare and Implement a Drainage Plan for the Project

Prior to project construction, the City or its contractor will prepare and implement a drainage plan for the project that will allow the estimated 4,000-cfs increase in runoff volume to pass with minor constrictions at culvert headways. The City will verify in construction plans that these designs have been included and will verify their proper installation concurrently with project construction.

Mitigation Measure HYD-2: Return Groundwater-Related Dewatering Effluent to Aquifer

During dewatering, the City or its contractor will return all dewatering effluent to the aquifer. The method by which this will be achieved will be at the City's/contractor's discretion, but may include construction of infiltration basins. As a performance standard, all groundwater shall be returned to the aquifer. The City will review and approve all plans for this mitigation and perform monitoring during dewatering activities to verify that all groundwater returns to the aquifer.

4.7.5 Cumulative Hydrology Impacts

Impact HYD-6: Cumulative Increases in Runoff and Potential Flooding Hazards

The various alternatives would contribute to a cumulative increase in impervious surface when considering other existing or planned projects in the area. Therefore, the proposed project could contribute to a regional increase in runoff volumes and flooding. This impact would be considered significant. Mitigation Measures HYD-1 would reduce the impact to a less-than-significant level.

4.7.6 Water Quality Impacts

Build Alternative A: Franklin to Freeport North Alignment

Impact WQ-1: Erosion and Sedimentation during Construction

Construction activities introduce the potential for increased erosion and sedimentation, with subsequent effects on water quality. During site grading, trenching, and construction activities, areas of bare soil would be exposed to erosive forces for long periods of time. Bare soils are much more likely to erode than vegetated areas because of the lack of dispersion, infiltration, and retention properties created by covering vegetation. Construction activities involving soil disturbance, excavation, cutting/filling, stockpiling, and grading could result in increased erosion and sedimentation to surface waters.

Specific activities proposed with potential to generate construction-related water quality effects include the extension of Cosumnes River Boulevard, Morrison Creek/UPRR bridge overcrossing, and I-5 interchange. For the bridge crossing, abutments would be set at the outside edge of the top of the levee (the top of the levee is approximately 3.7 m [12 ft] wide). If the inside edge of the top of the levee is the edge of the channel bank, then the two abutments would be located at approximately 3 m (10 ft) from the edge of the channel bank of Morrison Creek. Falsework would be required for construction of the cast-in-place superstructure. Pier columns would be constructed across the creek and railway, with a total of 20 piers for support. It is anticipated that water would be diverted around the construction site during construction. However, work directly in a stream channel is of particular concern because of the direct mechanism for contaminants to reach surface waters.

Construction phase activities may result in potential discharge into surface waters and may have a resulting alteration of surface water quality. However, the City has committed to implement measures to address discharge effects (See Section 3.22.3, "Water Quality Environmental Commitments," regarding the Storm Water Pollution Prevention Program [SWPPP]). This impact would be considered less than significant. No mitigation is required.

Impact WQ-2: Releases of Hazardous Materials during Construction

Accidental spills of hazardous vehicular and equipment fluids may occur during construction. These potential spills, if not contained, could contaminate and significantly alter the quality of surface water or groundwaters. However, the City has committed to implement measures to address potential spill hazards (see Section 3.22.3, "Water Quality Environmental Commitments"). Mitigation Measure WQ-1 would reduce the impact to a less-than-significant level.

Impact WQ-3: Degradation of Water Quality from Dewatering during Construction

Although most of the construction activities are anticipated to occur above the local water table, excavation near streams could occur below the water table and require dewatering. Dewatered effluent is likely to contain sediment and could potentially contain construction-related contaminants such as oils and greases because of contact with construction equipment. Discharge of dewatering effluent to either surface water or groundwater could adversely affect surface and groundwater quality. However, the City has committed to implement measures to address water quality degradation (see Section 3.22.3, "Water Quality Environmental Commitments"). This impact would be considered less than significant. No mitigation is required.

Impact WQ-4: Degradation of Surface Water Quality during Operation

As discussed under Impact HYD-1, project facilities are expected to result in a slight increase in drainage flows because of runoff from increased amounts of impervious surfaces. In addition, as discussed previously, roadways are anticipated to contribute a variety of non–point source contaminants to surface runoff. Therefore, this alternative could increase both stormwater and non-stormwater runoff, transporting contaminants to adjacent receiving waters.

Contaminated runoff associated with project operations could reduce surface water quality. This permanent, direct impact is considered significant. Mitigation Measure WQ-2 would reduce this impact to a less-than-significant-level.

Impact WQ-5: Operational Phase Degradation of Groundwater Quality

This alternative would not use groundwater for operation, nor would it provide a substantial source of groundwater recharge, as the road design will direct all stormwater runoff into the storm drain system. Therefore, operation of this roadway is not expected to cause changes in groundwater quality. There would be no impact.

Build Alternative B: Franklin to Freeport South Alignment

The impacts under this alternative would be the same as those described for Build Alternative A.

No Build Alternative

Under this alternative, no action would be taken, and baseline conditions would continue. There would be no impacts.

4.7.7 Water Quality Avoidance, Minimization and Mitigation Measures

Mitigation Measure WQ-1: Implement Measures to Maintain Groundwater Quality

If an appreciable spill has occurred and results determine that project activities have adversely affected groundwater quality, a detailed analysis will be performed by a Registered Environmental Assessor to identify the likely cause of contamination. This analysis will conform to American Society for Testing and Materials standards, and include recommendations for reducing or eliminating the source or mechanisms of contamination. Based on this analysis, the City or its contractor will select and implement measures to control contamination, with a performance standard that groundwater quality must be returned to baseline conditions. These measures will be subject to City approval.

Mitigation Measure WQ-2: Incorporate Source and Treatment Controls in Design (project falls into greater or equal to 5 acres road surface category)

To reduce or eliminate water quality effects from polluted runoff from project facilities, the City or its contractor will implement multiple BMPs in areas with potential to drain to storm drainage systems or surface waters. As a performance standard, these BMPs will be selected to achieve maximum sediment removal and represent the Best Achievable Technology (BAT) that is economically achievable. The BMPs may include a combination of source control, structural improvements, and treatment systems. They may include but are not limited to the following.

1. Grass strips, high infiltration substrates, and grassy swales will be used where feasible to reduce runoff and provide initial stormwater treatment.

2. Small settling, treatment, or infiltration devices may be installed beneath paved areas to provide initial filtration before discharge into subsequent treatment systems or storm drainage systems.
3. Drains will discharge to natural surfaces or swales where possible to avoid excessive concentration and channelization of stormwater.
4. Permanent energy dissipaters for drainage outlets will be installed.
5. If necessary, retention or detention basins designed to provide effective water quality control will be installed. Basin features will include the following.
   a. Retention time for settling of fine particles will be maximized.
   b. Maintenance schedules will be established for periodic removal of sedimentation, excessive vegetation, and debris that may clog basin inlets and outlets.
   c. The retention basin elevation will be maximized to allow the highest amount of infiltration and settling before discharge.

These BMPs shall be incorporated into project design before finalization of design and initiation of project construction. The City or its contractor will conduct routine (at least monthly) inspections of the construction area to verify that the identified BMPs are properly implemented and maintained. The City will notify its contractor immediately if there is a noncompliance issue and will require compliance.

4.7.8 Cumulative Water Quality Impacts

Although the surface waters in the project area are identified as impaired for a variety of constituents, indicating that they have no additional assimilative capacity for these constituents, none of these constituents are anticipated to be generated during construction or operation of the proposed action. In addition, measures committed to by the City and measures included as mitigation would ensure that other impacts on water quality are avoided or minimized. Therefore, the proposed project is not anticipated to contribute to any cumulative impacts under CEQA.

4.7.9 Findings

Impact	Significance Level	Significance Level after Mitigation
Impact HYD-1: Increases in the Volume of Surface Runoff during Operation	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: none*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*
Impact HYD-2: Changes in Drainage Patterns during Construction	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*
Impact HYD-3: Changes in Drainage Patterns during Operation	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*
Impact HYD-4: Changes in Groundwater Quantity during Construction	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: none*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*
Impact HYD-5: Changes in Groundwater Quantity during Operation	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*
Impact HYD-6: Cumulative Increases in Runoff and Potential Flooding Hazards	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: none*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*
Impact WQ-1: Erosion and Sedimentation during Construction	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*
Impact WQ-2: Releases of Hazardous Materials during Construction	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: none*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*
Impact WQ-3: Degradation of Water Quality from Dewatering during Construction	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*
Impact WQ-4: Degradation of Surface Water Quality during Operation	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: none*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*
Impact WQ-5: Operational Phase Degradation of Groundwater Quality	*Build Alternative A: none* *Build Alternative B: none* *No Build Alternative: none*	*Build Alternative A: none* *Build Alternative B: none* *No Build Alternative: none*

Notes: S = significant.
LTS = less than significant.
SU = significant and unavoidable.

4.8 Air Quality

See the "Air Quality" environmental setting section in Chapter 3 for a discussion of existing major land uses and relevant plans and policies.

4.8.1 CEQA Impacts

Refer to the associated "Approach and Methodology" subsections in Chapter 3 for a description of the methods used to evaluate impacts.

4.8.2 Standards of Significance

The proposed action would have a significant impact if it would:

- Violate any air quality standard or contribute to an existing or projected air quality violation
- Expose sensitive receptors to pollutants
- Alter air movement, moisture, or temperature, or cause any change in climate
- Create objectionable odors

Based on these guidelines, the project is considered to have a significant impact if emissions would exceed the thresholds indicated in Table 3.14-3 (duplicated below from Chapter 3, Section 3.14, "Air Quality"). For projects that exceed these levels, project applicants must implement as many feasible mitigation measures as possible to substantially lessen or avoid significant air quality impacts.

4.8.3 Air Quality Impacts

Build Alternative A: Franklin to Freeport North Alignment

Impact AQ-1: Direct Temporary Increase in Construction-Related Emissions

Construction activities for the proposed project would result in short-term impacts on ambient air quality in the area. Temporary construction emissions would result directly from grading and site preparation activities, and indirectly from construction equipment emissions and construction worker commuting patterns. Pollutant emissions would vary from day to day, depending on the level of activity, the specific operations, and the prevailing weather. It is anticipated that construction activities would continue for approximately 24 months.

Construction of the new roadway was broken down into four phases: grubbing/land clearing, grading/excavation, construction of the drainage/utilities/subgrade, and roadway paving. Construction emissions would result from material handling and heavy equipment operations. Because of the use of heavy construction equipment (with associated dust-generating potential), it is anticipated that site-grading activities would result in the highest daily fugitive dust generation.

The Sacramento Metropolitan AQMD has specified significance thresholds to determine whether mitigation is needed for project-related impacts on air quality (see Table 3.14-3 duplicated below from Chapter 3, Section 3.14, "Air Quality"). For projects that exceed these levels, project applicants must implement as many feasible mitigation measures as possible to substantially lessen or avoid significant air quality impacts.

Table 3.14-3. SMAQMD Significance Thresholds

Emissions	Ozone Precursor Emissions		PM10
	ROG (pounds per day)	NO_X (pounds per day)	
Construction (short-term)	None	85	CAAQS (50 $\mu g/m^3$ over a 24-hour Period)
Operational (long-term)	65	65	CAAQS

Maximum daily construction emissions are summarized below in Table 3.14-4 (duplicated below from Chapter 3, Section 3.14, "Air Quality"). As previously mentioned, construction activities were divided into separate phases and analyzed separately. Consequently, project significance is not a comparison of the sum of all construction phases to the SMAQMD threshold levels. Instead, if one phase of construction is found to have a significant impact, then the entire project is considered to have a significant air quality impact.

Table 3.14-4. Construction Emission Estimates

Construction Phase	ROG[a]	NO_X[a]	PM10[b]
Grubbing/Land Clearing	19	112	NA
Grading/Excavation	45	428	2524[c]
Drainage/Utilities/Sub-Grade	16	81	NA
Paving	11	67	NA
Threshold	None	85	50

Source: Road Construction Model Version 5.1.
Note: PM10 estimates assume 50% control of fugitive dust from watering and associated dust control measures.
[a] Emissions indicated in pounds per day.
[b] Emissions indicated in $\mu g/m^3$.
[c] PM10 emissions calculated only for the grading/excavation phase, which represents the phase with the highest daily fugitive dust generation.

As indicated within Table 3.14-4 , construction-related emissions are anticipated to exceed the SMAQMD's daily thresholds for NO_X and PM10. The City has committed to implement measures to reduce the severity of the effect (see Section 3.22.1, "Air Quality Environmental Commitments"); however, the impact would still be considered significant. No mitigation is available to reduce the impact to a less-than-significant level; therefore, this impact is considered significant and unavoidable.

Impact AQ-2: Direct Permanent Increase in Local CO Concentrations at Nearby Intersections

The proposed project would add to traffic volumes on roads in and around the project area and would worsen levels of service at nearby intersections. CO modeling was performed to determine the significance of CO at various intersections for design-year with project conditions. The modeled intersections were selected based on the worst-case level of service of the intersections, as well as the intersection with the greatest lane volumes. Six design year conditions were modeled for this analysis:

- 2005 General Plan conditions (Scenario 3);
- 2005 General Plan plus Extension conditions (Scenario 4);
- 2005 General Plan plus Extension plus Connection conditions (Scenario 5);
- 2025 General Plan conditions (Scenario 1);
- 2025 General Plan plus Extension conditions (Scenario 2); and
- 2025 General Plan plus Extension plus Connection conditions (Scenario 3).

The modeled intersections included receptors located 30.5 m (100 ft) from the intersection diagonal to represent a worst-case scenario. Background CO concentrations were obtained by averaging the CO data for the last three years available at the nearest monitoring stations in the project area. Table 3.14-5 in Chapter 3 summarizes the results of CO dispersion modeling.

Table 3.14-5 in Chapter 3 indicates that the proposed project would not generate CO levels in excess of the ambient air quality standards indicated in Table 3.14-1. This impact would be considered less than significant. No mitigation is required.

Impact AQ-3: Direct Temporary Increased Health Risk Resulting from Exposure to Diesel Exhaust from Construction Activities

Based on information provided by the project engineers, it is anticipated that construction activities would continue for approximately 24 months. The assessment of cancer risk is typically based on a 70-year exposure period. Construction activities are sporadic, transitory, and short-term in nature, and once construction activities have ceased, so too have emissions from construction activities. Because exposure to diesel exhaust will be well below the 70-year exposure period, construction and operation of the proposed project is not anticipated to result in an elevated cancer risk to exposed persons due to the short-term nature construction-related diesel exposure. Consequently, the estimation of diesel risks associated with construction activities is not anticipated to result in any adverse health risks. This impact would be considered less than significant. No mitigation is required.

Build Alternative B: Franklin to Freeport South Alignment

The impacts under this alternative would be the same as those described for Build Alternative A

No-Build Alternative (No Project)

Under this alternative, no new roadway extension or connections would be built from Franklin Boulevard to I-5 or from I-5 to Freeport Boulevard. Consequently, this alternative would not result in any construction-related emissions. This alternative would maintain the existing roadway and intersection configurations. Under this alternative, the project traffic study (Fehr & Peers Associates 2005) shows that the traffic volumes would be less than under the two build alternatives with the same LOS. In addition, the results summarized in Table 3.14-5 in Chapter 3 indicate that no violations of federal CO standards are expected under this alternative. No impact would occur.

4.8.4 Air Quality Avoidance, Minimization and Mitigation Measures

No mitigation has been identified.

4.8.5 Cumulative Air Quality Impacts

Impact AQ-4: Cumulative Increase in Construction-Related Emissions

Construction activities will generate cumulatively significant levels of NO_X and PM10 under CEQA. The City has committed to implement measures to reduce the severity of effect (see Section 3.22.1, "Air Quality Environmental Commitments"); however, the impact would still be significant. No mitigation is available to reduce the impact to a less-than-significant level; therefore, the cumulative impact under CEQA is considered significant and unavoidable.

4.8.6 Findings

Impact	Significance Level	Significance Level after Mitigation
Impact AQ-1: Direct Temporary Increase in Construction-Related Emissions	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: none*	*Build Alternative A: SU* *Build Alternative B: SU* *No Build Alternative: none*
Impact AQ-2: Direct Permanent Increase in Local CO Concentrations at Nearby Intersections	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*
Impact AQ-3: Direct Temporary Increased Health Risk Resulting from Exposure to Diesel Exhaust from Construction Activities	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: none*
Impact AQ-4: Cumulative Increase in Construction-Related Emissions	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: none*	*Build Alternative A: SU* *Build Alternative B: SU* *No Build Alternative: none*

Notes: S = significant.
LTS = less than significant.
SU = significant and unavoidable.

4.9 Transportation/Circulation

See the "Traffic and Transportation" environmental setting section in Chapter 3 for a discussion of existing traffic patterns and relevant plans and policies. Also see Figures 4.9-1 through 4.9-7, which show peak hour traffic volumes, lane configurations, and traffic controls.

4.9.1 CEQA Impacts

Refer to the associated "Approach and Methodology" subsections in Chapter 3 for a description of the methods used to evaluate impacts.

4.9.2 Standards of Significance

Impact significance criteria are summarized below for study area roadways, intersections, bicycle, pedestrian, transit, and freeway facilities. City of Sacramento standards are identified separately from Caltrans standards.

City of Sacramento Standards of Significance

The following standards were used to evaluate study area roadways, intersections, bicycle, pedestrian, and transit facilities.

Roadways

The City of Sacramento has established a level of service standard for roadways and intersections of LOS C. The level of service is based on volume-to-capacity ratio for roadways and average control delay at signalized and unsignalized intersections. As stated in the City's Traffic Impact Guidelines (February 1996), a significant traffic impact occurs under the following conditions:

- the addition of the project causes a facility to change from LOS A, B, or C to LOS D, E, or F, or
- the addition of the project increases the average control delay by five seconds or more at an intersection already operating worse than LOS C, or
- the addition of the project increases the volume-to-capacity ratio .02 or more on a roadway already operating worse than LOS C.

This standard is consistent with a goal set forth in the City of Sacramento, General Plan Update (1988). Specifically, Section 5-11 – Goal D, states that the City will, "work towards achieving a Level of Service C on the city's local and major street system. Due to the constraints associated with existing development in the City, and because of other environmental concerns, this goal cannot always be met."

Bicycle Facilities

A significant bikeway impact would occur if:

- the project hindered or eliminated an existing designated bikeway, or if the project interfered with implementation of a proposed bikeway, or
- the project was to result in unsafe conditions for bicyclists, including unsafe bicycle/pedestrian or bicycle/motor vehicle conflicts.

Pedestrian Facilities

A significant pedestrian circulation impact would occur if:

- the project was to result in unsafe conditions for pedestrians, including unsafe increase in pedestrian/bicycle or pedestrian/motor vehicle conflicts.

Transit Facilities

A significant impact to the transit system would occur if:

- the project-generated ridership, when added to existing or future ridership, exceeds available or planned system capacity. Capacity is defined as the total number of passengers the system of busses and light rail vehicles can carry during the peak hours of operation

Caltrans Standards

The following standards were used to evaluate study area freeway facilities and ramp junction intersections.

Caltrans has identified LOS E as the concept LOS for I-5 in the Interstate 5 Transportation Concept (Caltrans District 3 1997). This LOS concept was used for freeway mainline segments and ramp junction intersections and adjacent intersections like Freeport Boulevard (SR 160)/Cosumnes River Boulevard. LOS E was also applied to the SR 99/Cosumnes River Boulevard interchange ramp junctions, although the concept LOS for SR 99 is LOS E.

4.9.3 Transportation/Circulation Impacts

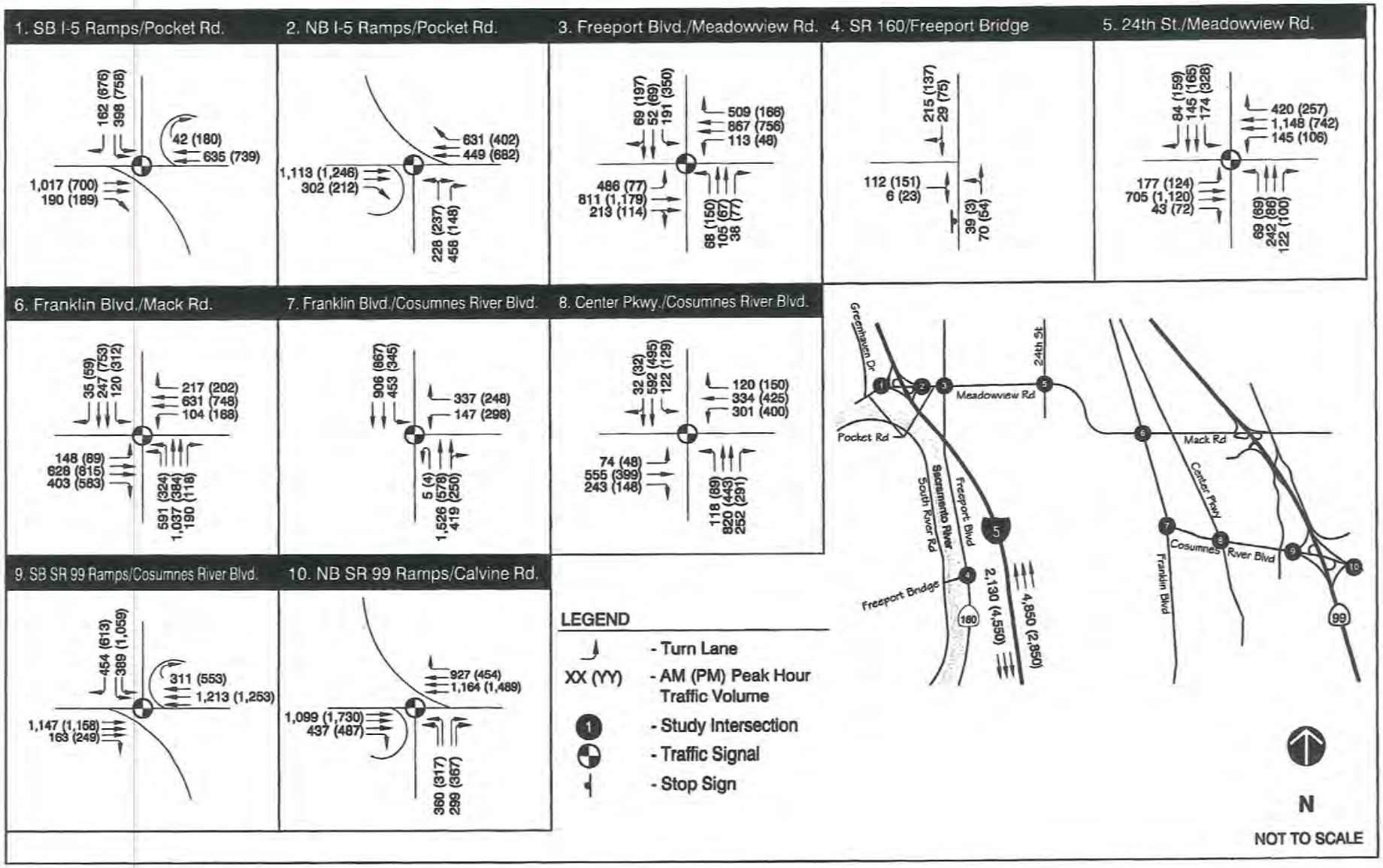
Build Alternative A: Franklin to Freeport North Alignment

Impact TR-1: Improved Level of Service on Pocket Road between I-5 and Freeport Boulevard

Build Alternative A would cause a redistribution of study-area traffic that would decrease daily traffic volume on Pocket Road between I-5 and Freeport Boulevard. The traffic volume decrease would improve the operations from unacceptable (LOS D) with the No Build Alternative to acceptable (LOS B) operations. This impact would be considered less than significant. No mitigation is required.

Impact TR-2: Improved Level of Service on Meadowview Road between 24th Street and Brookfield Drive

Build Alternative A would cause a redistribution of study-area traffic that would decrease daily traffic volume on Meadowview Road between 24th Street and Brookfield Drive. The traffic volume decrease would improve the operations from unacceptable (LOS D) with the No Build Alternative to acceptable (LOS C) operations. This impact would be considered less than significant. No mitigation is required.



PEAK HOUR TRAFFIC VOLUMES, LANE CONFIGURATIONS, AND TRAFFIC CONTROL - EXISTING CONDITIONS

FIGURE 4.9-1

FEHR & PEERS
TRANSPORTATION CONSULTANTS

May 26, 2005 MJF
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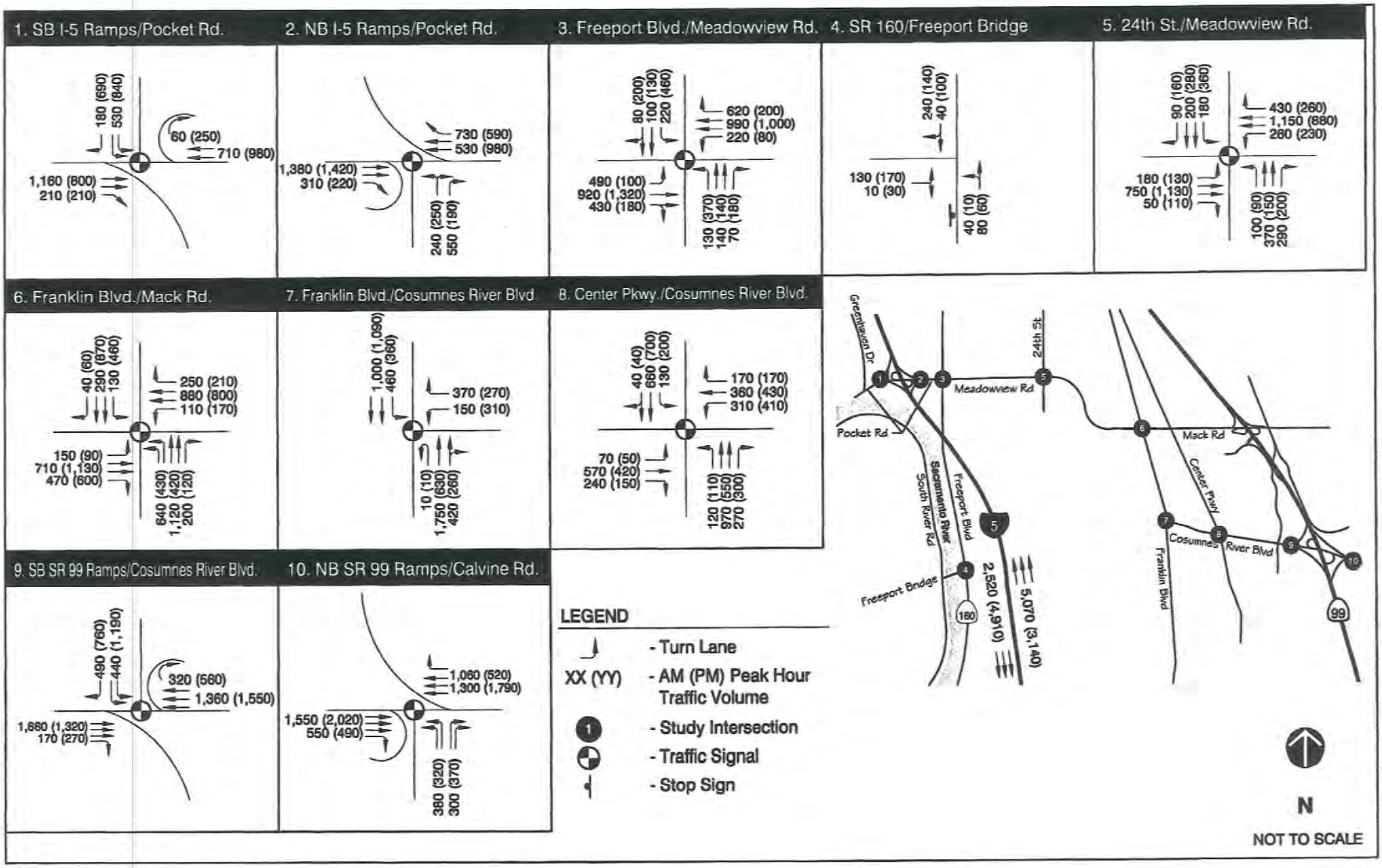

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TRANSPORTATION CONSULTANTS

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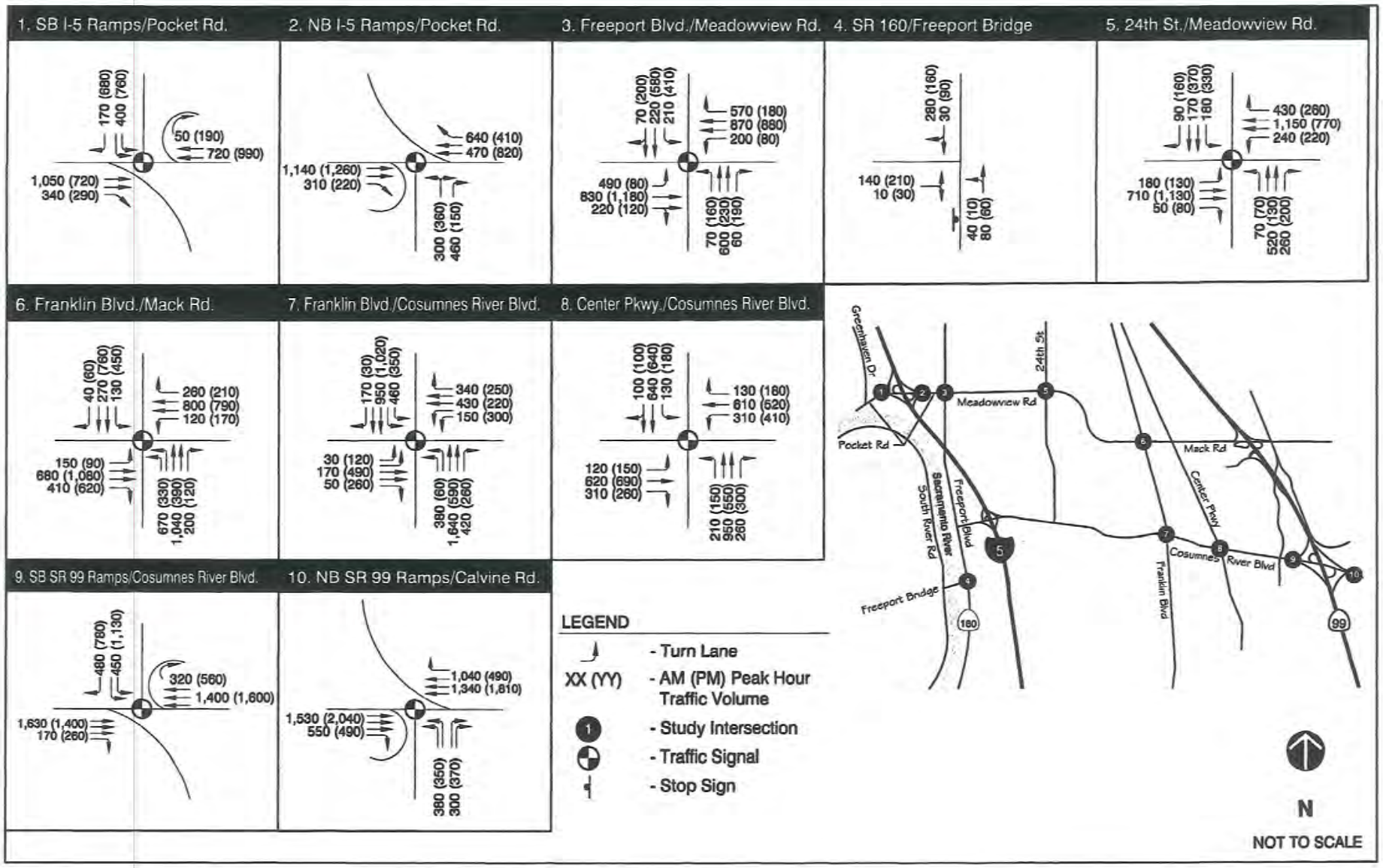
PEAK HOUR TRAFFIC VOLUMES, LANE CONFIGURATIONS, AND TRAFFIC CONTROL - YEAR 2005 NO BUILD ALTERNATIVE

FIGURE 4.9-2



FEHR & PEERS
TRANSPORTATION CONSULTANTS

May 26, 2005 MJF
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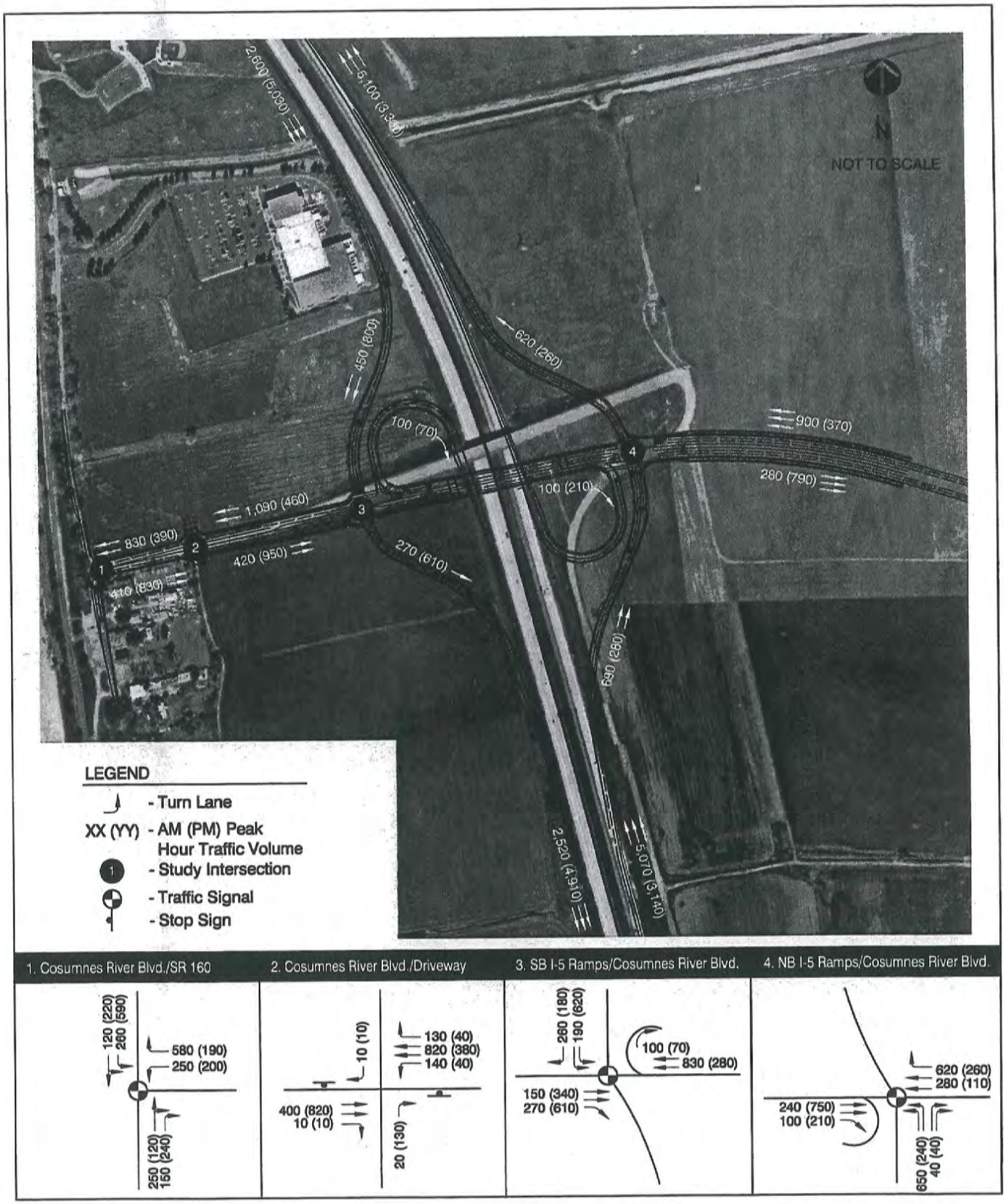
PEAK HOUR TRAFFIC VOLUMES, LANE CONFIGURATIONS, AND TRAFFIC CONTROL - YEAR 2005 BUILD ALTERNATIVE A AND ALTERNATIVE B

FIGURE 4.9-3



PEAK HOUR TRAFFIC VOLUMES, LANE CONFIGURATIONS, TRAFFIC CONTROL, AND PROPOSED INTERCHANGE - YEAR 2005 BUILD ALTERNATIVE A AND ALTERNATIVE B

FEHR & PEERS
TRANSPORTATION CONSULTANTS

May 26, 2005 MJF
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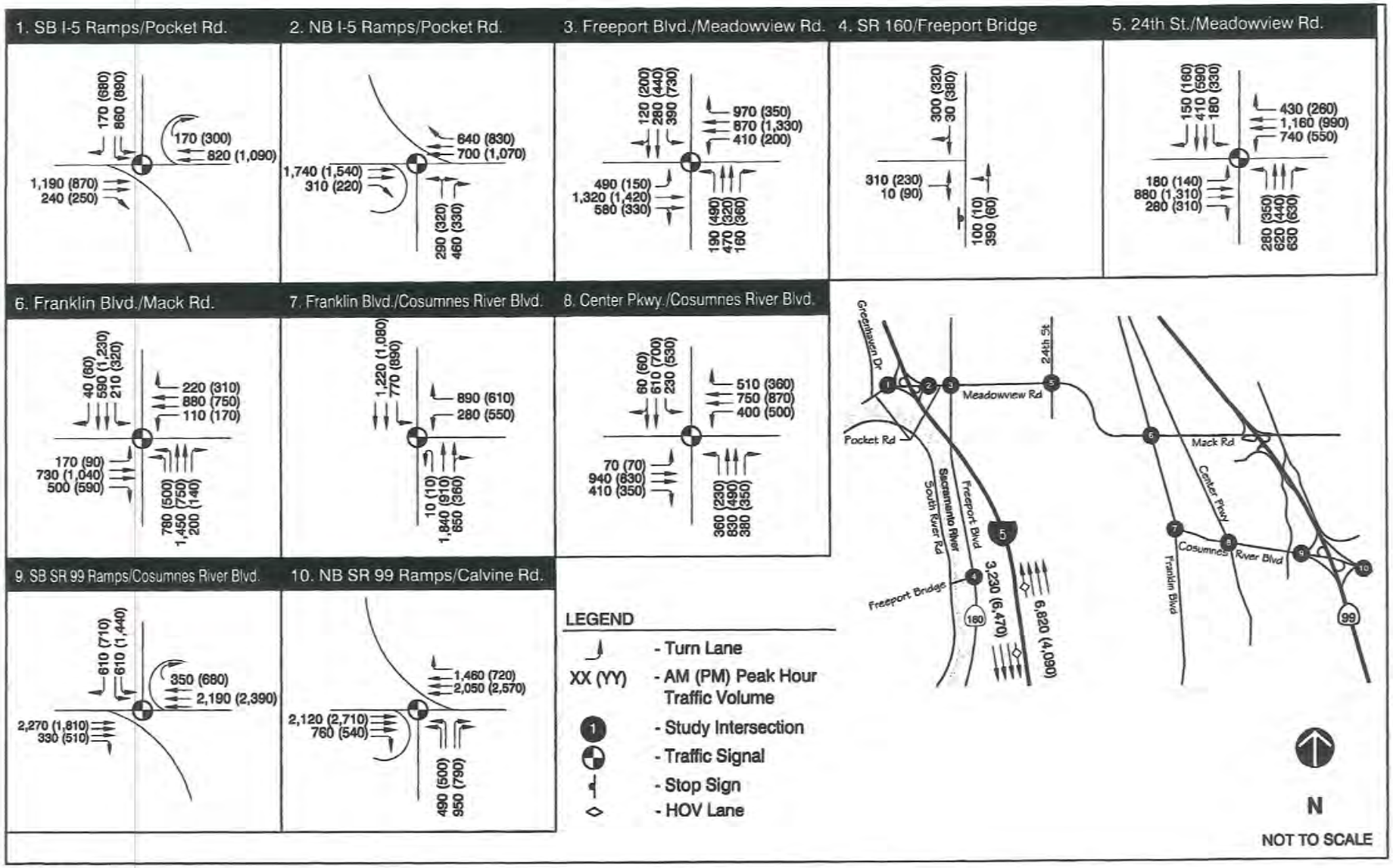
FIGURE 4.9-4



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May 26, 2005 MJF
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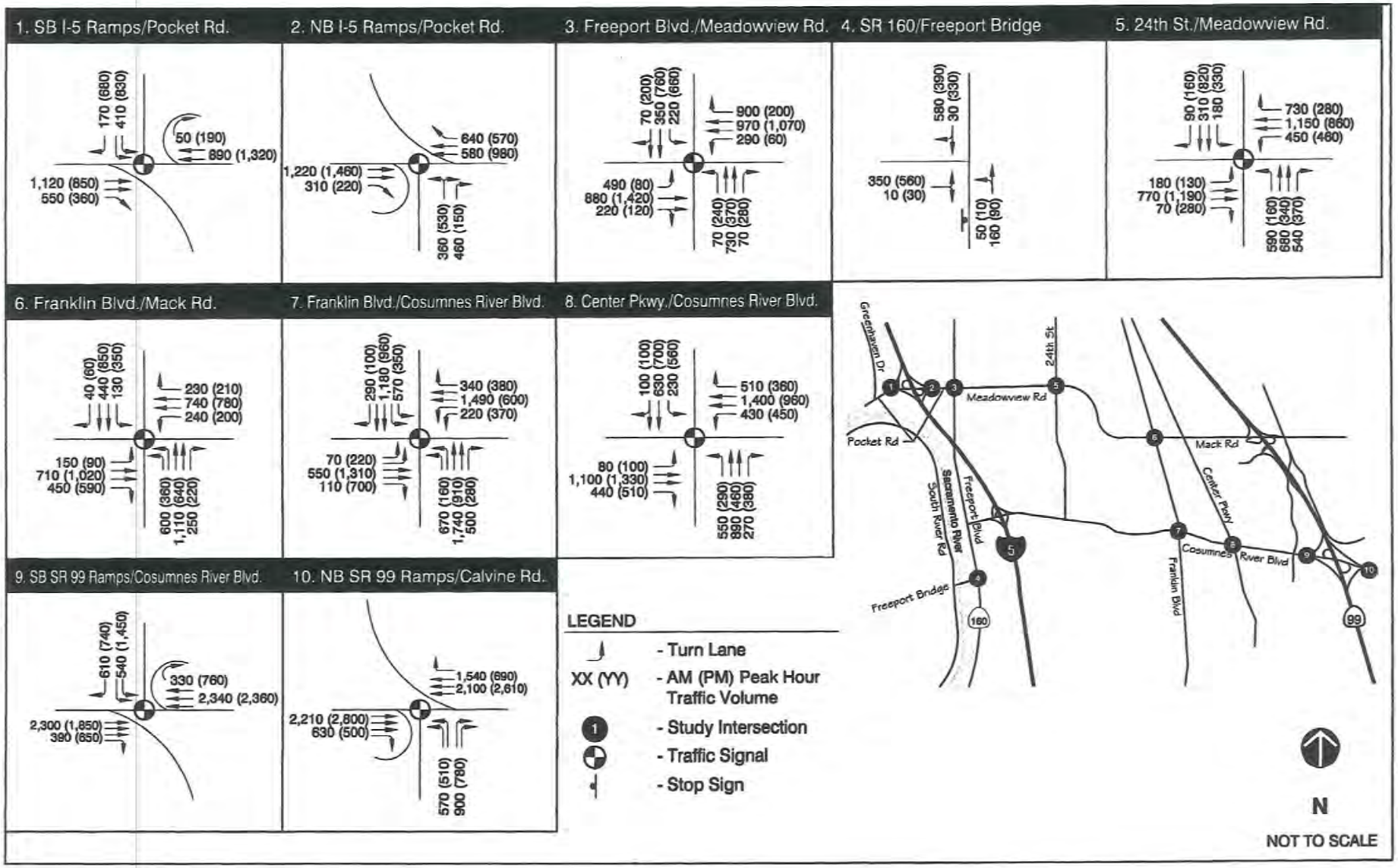
PEAK HOUR TRAFFIC VOLUMES, LANE CONFIGURATIONS, AND TRAFFIC CONTROL - YEAR 2025 NO BUILD ALTERNATIVE

FIGURE 4.9-5



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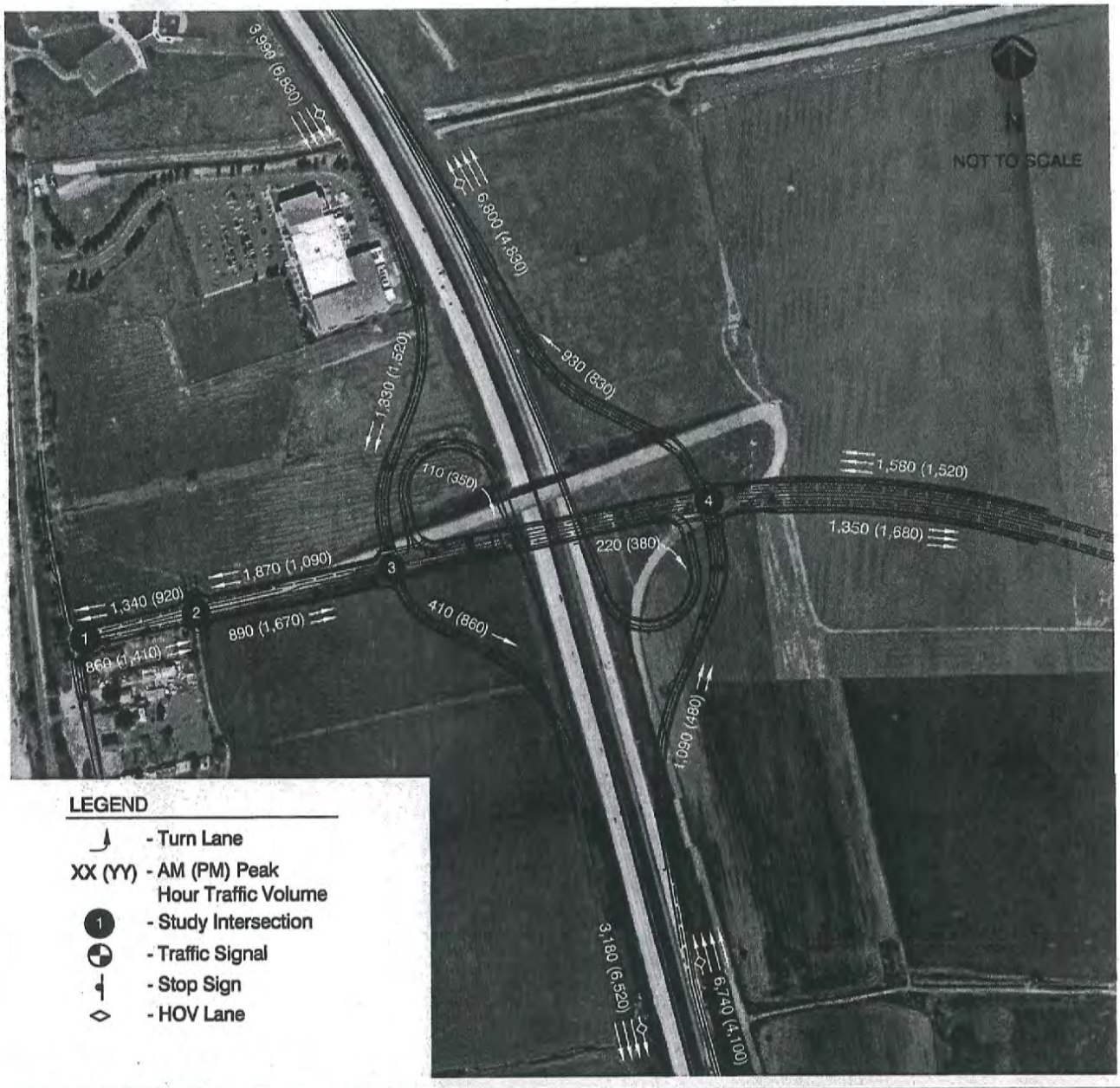
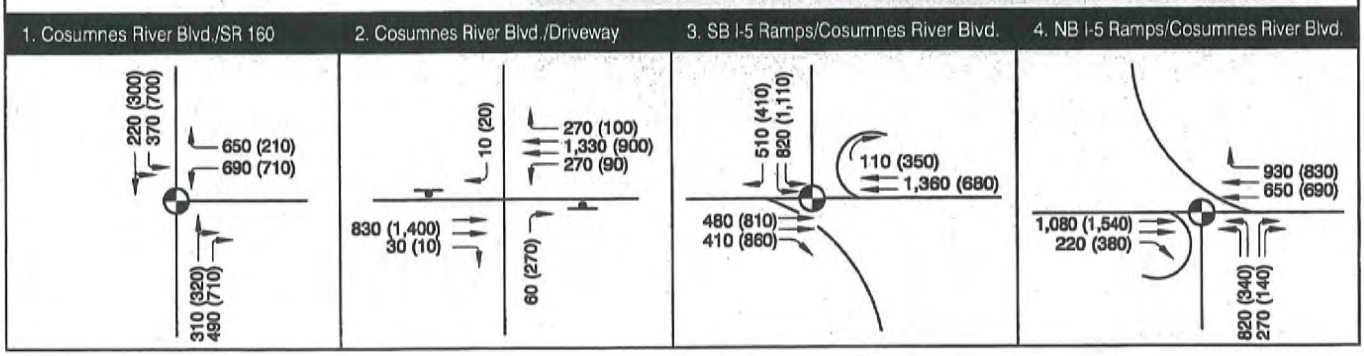
PEAK HOUR TRAFFIC VOLUMES, LANE CONFIGURATIONS, AND TRAFFIC CONTROL - YEAR 2025 BUILD ALTERNATIVE A AND ALTERNATIVE B

FIGURE 4.9-6





PEAK HOUR TRAFFIC VOLUMES, LANE CONFIGURATIONS, TRAFFIC CONTROL, AND PROPOSED INTERCHANGE - YEAR 2025 BUILD ALTERNATIVE A AND ALTERNATIVE B

FEHR & PEERS
TRANSPORTATION CONSULTANTS

May 26, 2005 MJF
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FIGURE 4.9-7

Impact TR-3: Improved Operations on Franklin Boulevard between Mack Road and Cosumnes River Boulevard

Build Alternative A would cause a redistribution of study-area traffic that would decrease daily traffic volume on Franklin Boulevard between Mack Road and Cosumnes River Boulevard. The traffic volume decrease would reduce the volume-to-capacity ratio by 0.06 compared to operations with the No Build Alternative. This impact would be considered less than significant. No mitigation is required.

Impact TR-4: Increased Daily Traffic Volumes on Cosumnes River Boulevard between Center Parkway and Bruceville Road

Build Alternative A would cause a redistribution of study-area traffic that would increase daily traffic volumes on Cosumnes River Boulevard between Center Parkway and Bruceville Road. The traffic volume increase would increase the volume-to-capacity ratio by 0.5, which would exceed the 0.2 threshold established by the City of Sacramento. This permanent, direct impact would be considered significant. Implementation of Mitigation Measure TR-1 would reduce this impact to a less-than-significant level; however, implementation of Mitigation Measure TR-1 is not guaranteed and therefore this impact would be considered significant and unavoidable.

Impact TR-5: Increased Peak Hour Traffic Volumes on Critical Turn Movements at the Freeport Boulevard/Meadowview Road Intersection

Build Alternative A would cause a redistribution of study-area traffic that would increase peak hour traffic volumes on critical turn movements at the Freeport Boulevard/Meadowview Road intersection (LOS E – in the a.m. peak hour), which would increase the average control delay by 5.0 seconds. This permanent, direct impact would be considered significant. Implementation of Mitigation Measure TR-2 would reduce this impact to a less-than-significant level.

Impact TR-6: Improved Operations at the 24th Street/Meadowview Road Intersection

Build Alternative A would cause a redistribution of study-area traffic that would reduce delay at the 24th Street/Meadowview Road intersection compared to the No Build Alternative. This impact is considered less than significant. No mitigation is required.

Impact TR-7: Improved Operations at the Franklin Boulevard/Mack Road Intersection

Build Alternative A would cause a redistribution of study-area traffic that would reduce delay at the Franklin Boulevard/Mack Road intersection compared to the No Build Alternative. This impact is considered less than significant. No mitigation is required.

Impact TR-8: Improved Operations at the Franklin Boulevard/Cosumnes River Boulevard Intersection

Build Alternative A would cause a redistribution of study-area traffic that would reduce delay at the Franklin Boulevard/Cosumnes River Boulevard intersection compared to the No Build Alternative. This impact is considered less than significant. No mitigation is required.

Impact TR-9: Increased Peak Hour Traffic Volumes on Critical Turn Movements at the Center Parkway/Cosumnes River Boulevard Intersection

Build Alternative A would cause a redistribution of study-area traffic that would increase peak hour traffic volumes on critical turn movements at the Center Parkway/Cosumnes River Boulevard intersection, which would increase the average control delay by more than 5.0

seconds. This permanent and direct impact would be considered significant. Implementation of Mitigation Measure TR-3 would reduce this impact to a less-than-significant level.

Impact TR-10: Increased Peak Hour Traffic Volumes on Critical Turn Movements at the Southbound SR 99 Ramps/Cosumnes River Boulevard Intersection

Build Alternative A would cause a redistribution of study-area traffic that would increase peak hour traffic volumes on critical turn movements at the southbound SR 99 Ramps/Cosumnes River Boulevard intersection (LOS D – in the p.m. peak hour), which would change the LOS from LOS C operations to LOS D operations. LOS D is acceptable under Caltrans standards. This impact would be considered less than significant. No mitigation is required.

Impact TR-11: Redistribution of Study Area Traffic Resulting in Increased Traffic at the Freeport Boulevard (SR 160)/Cosumnes River Boulevard Intersection

Build Alternative A would cause a redistribution of study-area traffic that would result in LOS D operations at the Freeport Boulevard (SR 160)/Cosumnes River Boulevard in the p.m. peak hour. However, because this is an intersection on a Caltrans facility, the threshold is LOS E. This impact would be considered less than significant. No mitigation is required.

Impact TR-12: Temporary Delays in Circulation during Construction of the Project

Construction of Build Alternative A would last approximately 24 months. Construction near the Deerfield subdivision would occur primarily between 7 a.m. and 4 p.m. on weekdays. Daytime access to businesses on Freeport Boulevard would be maintained during construction, and at least one lane of traffic on Franklin and Freeport Boulevards would remain open during construction; however, construction activities could temporarily disrupt traffic circulation patterns on Franklin Boulevard, Stonecrest Avenue, and Freeport Boulevard. In addition mainline work and work on the interchange will be required to be conducted during off-peak hours to minimize disruption to traffic on the interstate. This impact would be considered less than significant under CEQA because the City will require the preparation of a traffic management plan to minimize delays during construction. No mitigation is required.

Alternative B: Franklin to Freeport South Alignment

The impacts for Build Alternative B are identical to Build Alternative A.

No Build Alternative

Impact TR-13: Unacceptable (LOS D) Operations on Area Roadways

Under the No Build Alternative, level of service on area roadways would continue to deteriorate as follows.

Along the following roadway segments, the No Build Alternative would result in unacceptable (LOS D) operations:

- Pocket Road between I-5 and Freeport Boulevard
- Meadowview Road between 24th Street and Brookfield Drive
- Franklin Boulevard between Mack Road and Cosumnes River Boulevard
- Cosumnes River Boulevard between Center Parkway and Bruceville Road

In addition, the No Build Alternative would result in unacceptable operations at the following intersections:

- Freeport Boulevard/Meadowview Road intersection: unacceptable (LOS E) operations at the during the a.m. and p.m. peak hours
- 24th Street/Meadowview Road intersection: unacceptable (LOS D) operations and higher delay during the p.m. peak hour
- Franklin Boulevard/Mack Road intersection: unacceptable (LOS D and E) operations and higher delay during the a.m. and p.m. peak hours, respectively
- Franklin Boulevard/Cosumnes River Boulevard intersection: unacceptable (LOS F) operations and higher delay during the a.m. peak hour

The No Build Alternative would not construct the extension of Cosumnes River Boulevard between Franklin Boulevard and Freeport Boulevard or provide an interchange at I-5. Consequently, the existing two-way stop controlled intersection on Freeport Boulevard at Stonecrest Avenue intersection would remain.

The No Build Alternative would not be consistent with the City's General Plan and would not create a new regional connection between Franklin Boulevard and Freeport Boulevard. Consequently, the No Project Alternative would not provide a new connection for bicyclists and pedestrians or for new transit routes.

4.9.4 Cumulative Transportation/Circulation Impacts[1]

Cumulative (Year 2025) conditions for the study area roadway system are summarized in Chapter 3 in Tables 3.17-14 through 3.17-20, which include traffic analysis results for study area roadway segments, intersections, freeway mainline segments, ramp junctions, ramp meters, and regional circulation performance. Impacts under both Build Alternatives would be identical.

Impact TR-14: Improved Cumulative Operations on Pocket Road between I-5 and Freeport Boulevard

Under cumulative plus project conditions, the Build Alternatives would cause a redistribution of study-area traffic that would decrease daily traffic volume on Pocket Road between I-5 and Freeport Boulevard. The traffic volume decrease would improve the operations from unacceptable (LOS F) with the No Build Alternative to acceptable (LOS B) operations. This impact would be considered less than significant. No mitigation is required.

The No Build Alternative would result in unacceptable (LOS F) operations on Pocket Road between I-5 and Freeport Boulevard.

[1] The cumulative analyses in the traffic report and this document are based on the anticipated travel demand for 2025. The project is expected to be completed by 2008. Based on a review of the traffic forecasting model, the growth rate from 2000 to 2025 is estimated at 2.1 percent per year. Most of that growth is anticipated to occur between 2000 and 2015 (with an estimated growth rate of 3.1 percent), slowing to a growth rate of 0.6 percent per year from 2015 to 2025. This trend is consistent with the timing and level of development anticipated to occur in Elk Grove south of the project area. If the annual average growth rate of 0.6 percent for the period between 2015 and 2025 is extrapolated over the time period from 2025 to 2030, the difference is approximately 3 percent and is statistically insignificant.

Impact TR-15: Improved Cumulative Operations on Meadowview Road between Freeport Boulevard and 24th Street

Under cumulative plus project conditions, the Build Alternatives would cause a redistribution of study-area traffic that would decrease daily traffic volume on Meadowview Road between Freeport Boulevard and 24th Street. The traffic volume decrease would improve the operations from unacceptable (LOS F) with the No Build Alternative to acceptable (LOS C) operations. This impact would be considered less than significant. No mitigation is required.

The No Build Alternative would result in unacceptable (LOS F) operations on Meadowview Road between Freeport Boulevard and 24th Street.

Impact TR-16: Improved Cumulative Operations on Meadowview Road between 24th Street and Brookfield Drive

Under cumulative plus project conditions, the Build Alternatives would cause a redistribution of study-area traffic that would decrease daily traffic volume on Meadowview Road between 24th Street and Brookfield Drive. The traffic volume decrease would improve the operations from unacceptable (LOS F) with the No Build Alternative. This impact would be considered less than significant. No mitigation is required.

The No Build Alternative would result in unacceptable (LOS F) operations on Meadowview Road between 24th Street and Brookfield Drive.

Impact TR-17: Improved Cumulative Operations on Mack Road between Brookfield Drive and Franklin Boulevard

Under cumulative plus project conditions, the Build Alternatives would cause a redistribution of study-area traffic that would decrease daily traffic volume on Mack Road between Brookfield Drive and Franklin Boulevard. The traffic volume decrease would improve the operations from unacceptable (LOS E) with the No Build Alternative to acceptable (LOS C) operations. This impact would be considered less than significant. No mitigation is required.

The No Build Alternative would result in unacceptable (LOS E) operations on Mack Road between Brookfield Drive and Franklin Boulevard.

Impact TR-18: Improved Cumulative Operations on Mack Road between Franklin Boulevard and Center Parkway

Under cumulative plus project conditions, the Build Alternatives would cause a redistribution of study-area traffic that would decrease daily traffic volume on Mack Road between Franklin Boulevard and Center Parkway. The traffic volume decrease would improve the operations from unacceptable (LOS D) with the No Build Alternative to acceptable (LOS C) operations. This impact would be considered less than significant. No mitigation is required.

The No Build Alternative would result in unacceptable (LOS D) operations on Mack Road between Franklin Boulevard and Center Parkway.

Impact TR-19: Improved Cumulative Operations on Franklin Boulevard between Mack Road and Cosumnes River Boulevard

Under cumulative plus project conditions, the Build Alternatives would cause a redistribution of study-area traffic that would decrease daily traffic volume on Franklin Boulevard between Mack Road and Cosumnes River Boulevard. The traffic volume decrease would reduce the volume-to-capacity ratio by 0.14 compared to the No Build Alternative. This impact would be considered less than significant. No mitigation is required.

The No Build Alternative would result in unacceptable (LOS F) operations on Franklin Boulevard between Mack Road and Cosumnes River Boulevard.

Impact TR-20: Increased Cumulative Daily Traffic Volumes on Cosumnes River Boulevard between Franklin Boulevard and Center Parkway

Under cumulative plus project conditions, the Build Alternatives would cause a redistribution of study-area traffic that would increase daily traffic volumes on Cosumnes River Boulevard between Franklin Boulevard and Center Parkway. The traffic volume increase would change the level of service from acceptable (LOS B) operations to unacceptable (LOS D) operations. Widening Cosumnes River Boulevard to six lanes would improve operations in this segment and reduce the significance of this impact; however, there is not adequate right-of-way to widen to six lanes; therefore, this direct and permanent impact would be considered significant and unavoidable.

The No Build Alternative would result in acceptable (LOS B) operations on Cosumnes River Boulevard between Franklin Boulevard and Center Parkway.

Impact TR-21: Increased Cumulative Daily Traffic Volumes on Cosumnes River Boulevard between Center Parkway and Bruceville Road

Under cumulative plus project conditions, the Build Alternatives would cause a redistribution of study-area traffic that would increase daily traffic volumes on Cosumnes River Boulevard between Center Parkway and Bruceville Road. The traffic volume increase would increase the volume-to-capacity ratio by 0.15, which exceeds the 0.02 threshold established by the City, and result in unacceptable (LOS E) operations. Widening Cosumnes River Boulevard to six lanes in this segment would improve operations but there is not adequate right-of-way to widen to six lanes; therefore, this direct and permanent impact would be considered significant and unavoidable. Implementation of Mitigation Measure TR-4 would reduce the severity of this impact, but not to a less-than-significant level.

The No Build Alternative would result in unacceptable (LOS E) operations on Cosumnes River Boulevard between Center Parkway and Bruceville Road.

Impact TR-22: Increased Cumulative Daily Traffic Volumes on Cosumnes River Boulevard between Bruceville Road and SR 99

Under cumulative plus project conditions, the Build Alternatives would cause a redistribution of study-area traffic that would increase daily traffic volumes on Cosumnes River Boulevard between Bruceville Road and SR 99. The traffic volume increase would increase the volume-to-capacity ratio by 0.07, which exceeds the 0.02 threshold established by the City, and result in unacceptable (LOS E) operations. Widening Cosumnes River Boulevard to eight lanes in this

segment would improve operations; however, this improvement would require additional right-of-way. The need for additional right-of-way, plus encroachment into the Unionhouse/Strawberry Creek detention basin, makes this improvement infeasible. This permanent and direct impact is considered significant. No mitigation is available; therefore, this impact is considered significant and unavoidable.

The No Build Alternative would result in unacceptable (LOS E) operations on Cosumnes River Boulevard between Bruceville Road and SR 99.

Impact TR-23: Improved Cumulative Operations on Freeport Boulevard between Meadowview Road and Cosumnes River Boulevard

Under cumulative plus project conditions, the Build Alternatives would cause a redistribution of study-area traffic that would decrease daily traffic volume on Freeport Boulevard between Meadowview Road and Cosumnes River Boulevard. The traffic volume decrease would improve the operations from unacceptable (LOS E) with the No Build Alternative to acceptable (LOS C) operations. This impact would be considered less than significant. No mitigation is required.

The No Build Alternative would result in unacceptable (LOS E) operations on Freeport Boulevard between Meadowview Road and Cosumnes River Boulevard.

Impact TR-24: Improved Cumulative Operations at the Freeport Boulevard/Meadowview Road Intersection

Under cumulative plus project conditions, the Build Alternatives would cause a redistribution of study-area traffic that would reduce peak hour traffic volumes entering the Freeport Boulevard/Meadowview Road intersection by approximately 1,000 and 900 vehicles during the a.m. and p.m. peak hours, respectively. The volume reduction will reduce peak hour delay at the intersection compared to the No Build Alternative. This impact would be considered less than significant. No mitigation is required.

The No Build Alternative would result in unacceptable (LOS F) operations at the Freeport Boulevard/Meadowview Road intersection during the a.m. and p.m. peak hours.

Impact TR-25: Increased Cumulative Peak Hour Traffic Volumes On Critical Turn Movements at the SR 160/Freeport Bridge Intersection

Under cumulative plus project conditions, the Build Alternatives would cause a redistribution of study-area traffic that would increase peak hour traffic volumes on critical turn movements at the SR 160/Freeport Bridge intersection, which would increase the average control delay by more than 5.0 seconds. This permanent and direct impact would be considered significant. Implementation of Mitigation Measure TR-5 would reduce this impact to a less-than-significant level; however, Mitigation Measure TR-5 is outside the control of the City of Sacramento and its implementation cannot be guaranteed; therefore, this impact is considered significant and unavoidable.

The No Build Alternative would result in unacceptable (LOS F and E) operations at the SR 160/Freeport Bridge intersection during the a.m. and p.m. peak hours, respectively.

Impact TR-26: Reduced Cumulative Peak Hour Traffic Volumes Entering the 24th Street/Meadowview Road Intersection

Under cumulative plus project conditions, the Build Alternatives would cause a redistribution of study-area traffic that would reduce peak hour traffic volumes entering the 24th Street/Meadowview Road intersection by approximately 200 and 700 vehicles during the a.m. and p.m. peak hours, respectively. The volume reduction will reduce p.m. peak hour delay at the intersection; however, delay during the a.m. peak hour will increase by 6.0 seconds compared to the No Build Alternative. Although total peak hour traffic volumes decrease during the a.m. peak hour, traffic volumes redistribute and increase on critical turning movements, which causes delay to increase. Additional right-of-way is needed to reduce the significance of this impact. The need for additional right-of-way makes this improvement infeasible. This permanent and direct impact would be considered significant. No mitigation is available; therefore, this impact is considered significant and unavoidable.

The No Build Alternative would result in unacceptable (LOS E and F) operations at the 24th Street/Meadowview Road intersection during the a.m. and p.m. peak hours, respectively.

Impact TR-27: Improved Cumulative Operations at he Franklin Boulevard/Mack Road Intersection

Under cumulative plus project conditions, the Build Alternatives would cause a redistribution of study-area traffic that would reduce peak hour traffic volumes entering the Franklin Boulevard/Mack Road intersection. The volume would improve unacceptable (LOS F) operations to acceptable (LOS E) operations during the a.m. and p.m. peak hours compared to the No Build Alternative. This impact would be considered less than significant. No mitigation is required.

The No Build Alternative would result in unacceptable (LOS F) operations at the Franklin Boulevard/Mack Road intersection during the a.m. and p.m. peak hours.

Impact TR-28: Increased Cumulative Peak Hour Traffic Volumes Entering the Franklin Boulevard/Cosumnes River Boulevard Intersection

Under cumulative plus project conditions, the Build Alternatives would cause a redistribution of study-area traffic that would increase peak hour traffic volumes entering the Franklin Boulevard/Cosumnes River Boulevard intersection but reduce delay during the a.m. peak hour and provide LOS E operations during the p.m. peak hour, due to capacity improvements at this intersection. This impact would be considered less than significant. No mitigation is required.

The No Build Alternative would result in unacceptable (LOS F) operations at the Franklin Boulevard/Cosumnes River Boulevard intersection during the a.m. and p.m. peak hours.

Impact TR-29: Increased Cumulative Peak Hour Traffic Volumes Entering the Center Parkway/Cosumnes River Boulevard Intersection

Under cumulative plus project conditions, the Build Alternatives would cause a redistribution of study-area traffic that would increase peak hour traffic volumes on critical turn movements at the Center Parkway/Cosumnes River Boulevard intersection, which would increase the average control delay by more than 5.0 seconds. Widening the segment from Center Parkway to Franklin Boulevard to two lanes in each direction is listed in the MTP for 2025 as a future improvement. The mitigation measure is not currently listed in the City's Capital Improvement Program (CIP), as it is a five-year expenditure plan that provides a financial strategy for the City's infrastructure improvements. Given that funding is currently not allocated to this mitigation measure in the City's CIP, this mitigation measure is not certain; therefore, this direct and permanent impact would be considered significant and unavoidable. Implementation of Mitigation Measure TR-4 would reduce the severity of this impact, but not to a less-than-significant level.

The No Build Alternative would result in unacceptable (LOS F) operations at the Center Parkway/Cosumnes River Boulevard intersection during the a.m. and p.m. peak hours.

Impact TR-30: Increased Cumulative Peak Hour Traffic Volumes On Critical Turn Movements At The Southbound SR 99 Ramps/Cosumnes River Boulevard Intersection

Under cumulative plus project conditions, the Build Alternatives would cause a redistribution of study-area traffic that would increase peak hour traffic volumes on critical turn movements at the southbound SR 99 Ramps/Cosumnes River Boulevard intersection, which would increase delay by more than 5.0 seconds during the a.m. and p.m. peak hours; however, the LOS would remain at LOS D and E for the a.m. and p.m. peak hour, respectively, which is consistent with Caltrans standards. This impact would be considered less than significant. No mitigation is required.

The No Build Alternative would result in acceptable (LOS D and E) operations at the southbound SR 99 Ramps/Cosumnes River Boulevard intersection during the a.m. and p.m. peak hour, respectively.

Impact TR-31: Redistribution of Cumulative Study Area Traffic Resulting in LOS E During the P.M. Peak Hour at the Freeport Boulevard (SR 160)/Cosumnes River Boulevard

Under cumulative plus project conditions, the Build Alternatives would cause a redistribution of study area traffic that would result in LOS E operations at the Freeport Boulevard (SR 160)/Cosumnes River Boulevard in the p.m. peak hour. However, because this is an intersection on a Caltrans facility, the threshold is LOS E. This impact would be considered less than significant. No mitigation is required.

The No Build Alternative would not construct the extension of Cosumnes River Boulevard between Franklin Boulevard and Freeport Boulevard or provide an interchange at I-5.

Impact TR-32: Redistribution of Cumulative Traffic on the I-5 Mainline and at Many of the Freeway Ramp Junctions

Under cumulative plus project conditions, the Build Alternatives would redistribute traffic on I-5 by providing an additional entrance/exit to the interstate. The mainline segments and ramp

junctions would all operate at acceptable levels with the No Build Alternative or the Build Alternatives.

4.9.5 Transportation/Circulation Avoidance, Minimization, and Mitigation Measures

The following mitigation measures are identified for existing plus project conditions. The exact need, timing and design of these measures will be determined by the City of Sacramento based on ongoing monitoring.

Existing Plus Project Condition Measures

Mitigation Measure TR-1: Widen Cosumnes River Boulevard between Center Parkway and Bruceville Road (Impact TR-4)

Existing plus project conditions indicate that the City of Sacramento needs to widen Cosumnes River Boulevard between Center Parkway and Bruceville Road from one to two lanes in each direction. Implementation of this mitigation measure would provide LOS A operations. This mitigation measure is listed in the regional Metropolitan Transportation Plan (MTP) for 2025 as a future improvement. The mitigation measure is not currently listed in the City's Capital Improvement Program (CIP), as it is a five-year expenditure plan that provides a financial strategy for the City's infrastructure improvements. Given that funding is currently not allocated to this mitigation measure in the City's CIP, this mitigation measure is not certain. Therefore, Impact TR-4 would be considered significant and unavoidable.

Mitigation Measure TR-2: Widen the Eastbound Approach to the Freeport Boulevard/Meadowview Road Intersection To Provide One Additional Left-Turn Lane (Impact TR-5)

Existing plus project conditions indicate that the City of Sacramento needs to widen the eastbound approach to the Freeport Boulevard/Meadowview Road intersection to provide one additional left-turn lane. With this improvement the eastbound approach to the intersection would have two left-turn lanes, one through lane, and a shared through/right-turn lane and would be substantially consistent with City General Plan policies regarding level of service on streets and roads. Implementation of this mitigation measure would provide LOS D operations during the a.m. peak hour. Based on preliminary review of this improvement, there appears to be sufficient pavement width in the eastbound direction to shift the through lanes and free up space for the eastbound left turn lane via restriping and minor signal modifications (moving the detector loops). The estimated cost for this measure is approximately $40,000 to $80,000.

Mitigation Measure TR-3: Improve the Center Parkway/Cosumnes River Boulevard Intersection (Impact TR-9)

Existing plus project conditions indicate that the City of Sacramento needs to improve the Center Parkway/Cosumnes River Boulevard intersection by providing one left-turn lane, two through lanes, and one right-turn lane on the eastbound and westbound approaches to the intersection. Implementation of this mitigation measure would provide LOS D operations during the a.m. and p.m. peak hours. This project would be constructed as part of the widening of Cosumnes River Boulevard between Center Parkway and Bruceville Road and between Center Parkway and Franklin Boulevard, which is listed in the MTP for 2025 as a future improvement. The

mitigation measure is not currently listed in the City's Capital Improvement Program (CIP), as it is a five-year expenditure plan that provides a financial strategy for the City's infrastructure improvements. Given that funding is currently not allocated to this mitigation measure in the City's CIP, this mitigation measure is not certain. Therefore, Impact TR-9 would be considered significant and unavoidable.

Cumulative Plus Project Condition Measures

The following mitigation measures are identified for cumulative plus project conditions. The exact need, timing and design of these measures will be determined by the City of Sacramento based on ongoing monitoring.

Mitigation Measure TR-4: Widen Cosumnes River Boulevard between Center Parkway and Franklin Boulevard (Impacts TR-21 and TR-29)

Under cumulative plus project conditions, the City of Sacramento would need to widen Cosumnes River Boulevard between Bruceville Road and Franklin Road from two to three lanes in each direction to accommodate the projected traffic volumes at levels of service acceptable to the City of Sacramento. However, acquiring the right of way to accommodate this widening is not feasible and therefore the impact of the proposed action would be considered significant and unavoidable. There is adequate right of way to widen Cosumnes River Boulevard between Bruceville Road and Franklin Boulevard from one to two lanes in each direction. The segment from Bruceville Road to Center Parkway, including widening the intersection of Center Parkway/Cosumnes River Boulevard was identified in Mitigation Measure TR-1 and TR-3 and the impact of the project on this segment was considered significant and unavoidable. Widening the segment from Center Parkway to Franklin Boulevard to two lanes in each direction is listed in the MTP for 2025 as a future improvement. The mitigation measure is not currently listed in the City's Capital Improvement Program (CIP), as it is a five-year expenditure plan that provides a financial strategy for the City's infrastructure improvements. Given that funding is currently not allocated to this mitigation measure in the City's CIP, this mitigation measure is not certain. Therefore, Impacts TR-21 and TR-29 would be considered significant and unavoidable.

Mitigation Measure TR-5: Installation of a Future Traffic Signal at the SR 160/Freeport Bridge Intersection (Impact TR-25)

Cumulative traffic conditions with or without the project indicate a need to improve operations at this intersection. In order to improve operations at this intersection, a traffic signal would need to be installed and the northbound approach to the SR 160/Freeport Bridge intersection would need to be widened to provide a left-turn pocket. In addition, the southbound approach to the intersection would need to be widened to provide a right-turn pocket. Implementation of this mitigation measure would provide LOS C operations during the a.m. and p.m. peak hours; however, the SR 160/Freeport Bridge intersection is located outside the City of Sacramento city limits and improvements to this intersection must be reviewed and approved by the County of Sacramento and Caltrans. The City of Sacramento does not have jurisdiction to implement this mitigation measure. Therefore, Impact TR-25 would be considered significant and unavoidable.

4.9.6 Findings

Impact	Significance Level	Significance Level after Mitigation
Impact TR-1: Improved Level of Service on Pocket Road between I-5 and Freeport Boulevard	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: S*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: SU*
Impact TR-2: Improved Level of Service on Meadowview Road between 24th Street and Brookfield Drive	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: S*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: SU*
Impact TR-3: Improved Operations on Franklin Boulevard between Mack Road and Cosumnes River Boulevard	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: S*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: SU*
Impact TR-4: Increased Daily Traffic Volumes on Cosumnes River Boulevard between Center Parkway and Bruceville Road	*Build Alternative A: PS* *Build Alternative B: PS* *No Build Alternative: S*	*Build Alternative A: SU* *Build Alternative B: SU* *No Build Alternative: SU*
Impact TR-5: Increased Peak Hour Traffic Volumes on Critical Turn Movements at the Freeport Boulevard/Meadowview Road Intersection	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: S*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: SU*
Impact TR-6: Improved Operations at the 24th Street/Meadowview Road intersection	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: S*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: SU*
Impact TR-7: Improved Operations at the Franklin Boulevard/Mack Road Intersection	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: S*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: SU*
Impact TR-8: Improved Operations at the Franklin Boulevard/Cosumnes River Boulevard Intersection	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: S*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: SU*
Impact TR-9: Increased Peak Hour Traffic Volumes on Critical Turn Movements at the Center Parkway/Cosumnes River Boulevard Intersection	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: S*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: SU*
Impact TR-10: Increased Peak Hour Traffic Volumes on Critical Turn Movements at the Southbound SR 99 Ramps/Cosumnes River Boulevard Intersection	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: S*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: SU*
Impact TR-11: Redistribution of Study Area Traffic Resulting in Increased Traffic at the Freeport Boulevard (SR 160)/Cosumnes River Boulevard Intersection	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: S*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: SU*
Impact TR-12: Temporary Delays in Circulation During Construction of the Project	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: LTS*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: LTS*
Impact TR-13: Unacceptable (LOS D) Operations on Area Roadways under the No Build Alternative	*Build Alternative A: none* *Build Alternative B: none* *No Build Alternative: S*	*Build Alternative A: none* *Build Alternative B: none* *No Build Alternative: SU*
Impact TR-14: Improved Cumulative Operations on Pocket Road between I-5 and Freeport Boulevard	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: S*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: SU*
Impact TR-15: Improved Cumulative Operations on Meadowview Road between Freeport Boulevard and 24th Street	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: S*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: SU*
Impact TR-16: Improved Cumulative Operations on Meadowview Road between 24th Street and Brookfield Drive	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: S*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: SU*
Impact TR-17: Improved Cumulative Operations on Mack Road between Brookfield Drive and Franklin Boulevard	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: S*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: SU*
Impact TR-18: Improved Cumulative Operations on Mack Road between Franklin Boulevard and Center Parkway	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: S*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: SU*

Impact	Significance Level	Significance Level after Mitigation
Impact TR-19: Improved Cumulative Operations on Franklin Boulevard between Mack Road and Cosumnes River Boulevard	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: S*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: SU*
Impact TR-20: Increased Cumulative Daily Traffic Volumes on Cosumnes River Boulevard between Franklin Boulevard and Center Parkway	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: LTS*	*Build Alternative A: SU* *Build Alternative B: SU* *No Build Alternative: LTS*
Impact TR-21: Increased Cumulative Daily Traffic Volumes on Cosumnes River Boulevard between Center Parkway and Bruceville Road	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: S*	*Build Alternative A: SU* *Build Alternative B: SU* *No Build Alternative: SU*
Impact TR-22: Increased Cumulative Daily Traffic Volumes on Cosumnes River Boulevard between Bruceville Road and SR 99	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: S*	*Build Alternative A: SU* *Build Alternative B: SU* *No Build Alternative: SU*
Impact TR-23: Improved Cumulative Operations on Freeport Boulevard between Meadowview Road and Cosumnes River Boulevard	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: LTS*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: SU*
Impact TR-24: Improved Cumulative Operations at the Freeport Boulevard/Meadowview Road Intersection	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: S*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: SU*
Impact TR-25: Increased Cumulative Peak Hour Traffic Volumes On Critical Turn Movements at the SR 160/Freeport Bridge Intersection	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: S*	*Build Alternative A: SU* *Build Alternative B: SU* *No Build Alternative: SU*
Impact TR-26: Reduced Cumulative Peak Hour Traffic Volumes Entering the 24th Street/Meadowview Road Intersection	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: S*	*Build Alternative A: SU* *Build Alternative B: SU* *No Build Alternative: SU*
Impact TR-27: Improved Cumulative Operations at he Franklin Boulevard/Mack Road Intersection	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: S*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: SU*
Impact TR-28: Increased Cumulative Peak Hour Traffic Volumes Entering the Franklin Boulevard/Cosumnes River Boulevard Intersection	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: S*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: SU*
Impact TR-29: Increased Cumulative Peak Hour Traffic Volumes Entering the Center Parkway/Cosumnes River Boulevard Intersection	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: S*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: SU*
Impact TR-30: Increased Cumulative Peak Hour Traffic Volumes On Critical Turn Movements At The Southbound SR 99 Ramps/Cosumnes River Boulevard Intersection	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: LTS*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: LTS*
Impact TR-31: Redistribution of Cumulative Study Area Traffic Resulting in LOS E During the P.M. Peak Hour at the Freeport Boulevard (SR 160)/Cosumnes River Boulevard	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*
Impact TR-32: Redistribution of Cumulative Traffic on the I-5 Mainline and at Many of the Freeway Ramp Junctions	*Build Alternative A: None* *Build Alternative B: None* *No Build Alternative: None*	*Build Alternative A: None* *Build Alternative B: None* *No Build Alternative: None*

Notes: S = significant.
LTS = less than significant.
SU = significant and unavoidable.

4.10 Biological Resources

See the "Biological Environmental" environmental setting section in Chapter 3 for a discussion of existing conditions and relevant plans and policies.

4.10.1 CEQA Impacts

Refer to the associated "Approach and Methodology" subsections in Chapter 3 for a description of the methods used to evaluate impacts.

4.10.2 Standards of Significance

The proposed action would have a significant impact if it would:

- result in direct removal, filling, hydrological interruption, or other interference with federally protected wetlands as defined by Section 404 of the Clean Water Act
- result in the removal of locally protected trees
- result in introduction of invasive nonnative species
- interfere substantially with the movement of any native resident or migratory wildlife species or with established native resident or migratory wildlife corridors
- impede the use of native wildlife nursery site
- either directly or through habitat modifications, affect any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations by the CDFG or USFWS

4.10.3 Biology Impacts

Build Alternative A: Franklin to Freeport North Alignment

Impact WTL-1: Permanent Direct Loss of Seasonal Emergent Wetland

Permanent impacts due to construction of this alternative would include the direct loss of seasonal emergent wetland in wetland features 2 and 11. (Refer to Table 3.17-1, duplicated below from Chapter 3, Section 3.17, "Biological Environment," for specific acreages of impact.)

Table 3.17-1. Impacts on Streams and Wetlands

Feature[b]	Type	Permanent Fill Impacts (Hectares [Acres])[a]		Permanent Shading Impacts (Hectares [Acres])
		Alternative A[c]	Alternative B[c]	
2	Seasonal emergent wetland	0.170 (0.42)	0.170 (0.42)	–
3	Freshwater marsh	0.004 (0.01)	0.004 (0.01)	0.03 (0.07)
4	Freshwater marsh	0.004 (0.01)	0.004 (0.01)	0.04 (0.09)
6	Freshwater marsh	0.016 (0.04)	0.016 (0.04)	0.21 (0.53)
7	Stream (Morrison Creek OHWM)	–	–	–
8	Freshwater marsh	0.004 (0.01)	0.004 (0.01)	0.04 (0.10)
9	Drainageway (freshwater marsh vegetation)	0.032 (0.08)	0.032 (0.08)	–
11	Seasonal emergent wetland	0.100 (0.24)	0.160 (0.40)	–
Total Impacts		**0.330 (0.81)**	**0.390 (0.97)**	**0.32 (0.79)**

[a] Impact areas are based on the preliminary delineation.
[b] Features identified on Figures 3.17-1a and 3.17-1b.
[c] Features 3, 4, 6, and 8 include only the impact area of column footprints.

With implementation of the water quality environmental commitments (see Chapter 2, Section 3.22.3), indirect impacts due to construction within seasonal emergent wetland features 2 and 11 are not anticipated. Construction activities would be limited to the roadway footprint. Both wetlands would be placed in culverts at the road crossing to allow flow to move beneath the roadbed. The culverts would be adequately sized to not restrict flow, and to maintain the upstream and downstream wetland functions. Construction would occur during the dry season. No soil would be sidecast within the wetland boundaries. Sedimentation could indirectly affect adjacent portions of wetland features 2 and 11 as a result of soil that has been moved or stockpiled within the construction area washing into wetland areas from the construction zone. This impact would be avoided by limiting construction to the dry season and by implementing erosion control measures in the SWPPP for the proposed action. Therefore, no indirect impacts on wetlands are anticipated.

The direct, permanent impact of loss of seasonal emergent wetland would be considered significant. Mitigation Measures WTL-1 and WTL-2 would reduce this impact to a less-than-significant level.

Impact WTL-2: Permanent Direct Loss or Degradation of Freshwater Marsh

Implementation of this alternative would result in direct fill of freshwater marsh during construction of the proposed action and degradation of freshwater marsh because of shading by the bridge structure following construction. (Table 3.17-1 duplicated above). Impacts on freshwater marsh habitat would be minimized using the design of an overcrossing of Morrison Creek. The placement of fill would be minimized by placement of piers to support the above-grade roadway instead of using at-grade construction. The proposed action includes construction of a bridge structure spanning the UPRR line and Morrison Creek. The permanent impacts of the overcrossing include placement of columns within wetland features 3, 4, 6, and 8; fill within the OHWM of Morrison Creek would be avoided.

The current design of the bridge structure spanning Morrison Creek and the UPRR line is shown in Figure 2-5 in Chapter 2. As shown, a single structure would be constructed on columns to span both the creek and the railroad. The bridge would require six pier lines. Each pier line would include four columns, each supported by a footing that would cover a 13.4-m^2 (144-ft^2)

area on the ground. A total of three pier lines (12 column footings) would be constructed in wetland features 3, 4, and 8 (one pier line or four columns per feature), and three pier lines (eight column footings) would be constructed in wetland feature 6 (Table 3.17-1 duplicated above).

Construction of the column footings would occur during the dry season to minimize potential erosion and sedimentation impacts from equipment driving through the wetlands to the locations of each footing. In addition, soil excavated for construction of the column footings would not be sidecast within the wetland. All soil would be sidecast directly outside the wetland boundary or placed in a truck staged outside of the wetland. Therefore, the anticipated direct loss of wetland area from construction of the bridge structure would occur only from construction of the column footings.

Additional direct permanent impacts on freshwater marsh vegetation and riparian trees beneath the UPRR/Morrison Creek bridge would occur because of shading by the new bridge structure. The bridge would be approximately 30.5 m (100 ft) wide. It would rise approximately 8 m (26 ft) high over the UPRR line, 5.5 m (18 ft) high over the existing levee, and 10.3 to 12.8 m (34 to 42 ft) above the ground level in wetland features 3, 4, 6, and 8 (Figure 2-5, Chapter 2). Most of the area beneath the bridge would be in permanent shade after construction, although the specific areas shaded would vary somewhat between seasons as the angle of the sun changes. The area on the north side would experience the greatest difference in light intensity. Shading would affect the continued growth and new establishment of freshwater marsh species and riparian trees in portions of wetland features 3, 4, 6, and 8. Existing wetland vegetation within the bridge footprint would thin and die out after construction, with scattered shade-tolerant, herbaceous emergent vegetation replacing it. Survival of woody vegetation would be unlikely. The wetland would become primarily an unvegetated other water of the United States that retains wetland hydrology and soils. This change in vegetation would alter the current function of the wetlands as wildlife habitat. For the purposes of this impact analysis, it is assumed that the entire area beneath the footprint of the bridge would be shaded and the existing wetland vegetation community would be lost or altered. The impact acreage is shown in Table 3.17-1, duplicated above, and impacts on riparian trees are discussed further in Impact VEG-2.

The loss and subsequent degradation of freshwater marsh due to construction of the project would be considered significant. Mitigation Measures WTL-1 and WTL-2 would reduce this impact to a less-than-significant level.

Impact WTL-3: Loss of Vegetated Drainageway

Construction of the proposed action would result in the direct fill of vegetated drainageway (Table 3.17-1 duplicated above). No fill would be placed within the OHWM of Morrison Creek. Construction within the approximately 6.8 meter (22.3 foot) wide drainageway feature 9 would be limited to the roadway footprint, which is approximately 47.5 m (156 ft) wide. The drainageway would be placed in a culvert to allow flow to move beneath the roadbed. Construction would occur during the dry season, and no soil will be sidecast within the wetland boundaries. Therefore, direct impacts within this wetland feature would include only the permanent fill areas.

Potential indirect impacts on portions of Morrison Creek adjacent to the construction area could occur because of sedimentation. Soil that has been moved or stockpiled within the construction

area could be washed into the creek from the construction zone. This impact would be avoided by limiting construction to the dry season and by implementation of erosion control measures in the SWPPP for the proposed action. No indirect impacts on Morrison Creek are anticipated.

The loss of vegetated drainageway due to construction of the project would be considered significant. Mitigation Measures WTL-1 and WTL-2 would reduce this impact to a less-than-significant level.

Impact VEG-1: Introduction or Spread of Noxious Weeds

Construction activities associated with this alternative, including land clearing and grading, could result in the introduction or spread of noxious weed species. These noxious weeds could displace native species, thereby changing the diversity of species or number of any species of plants. Soil-disturbing activities during construction could promote the introduction of plant species that are not currently found in the project area, including noxious weeds. Construction activities could also spread noxious weed species that already occur in the project area.

The introduction or spread of noxious weed species could have a substantial adverse effect on special-status species through habitat modification and could affect sensitive natural communities in nearby open space. This impact would be considered significant. Mitigation Measure VEG-1 would reduce this impact to a less-than-significant level.

Impact VEG-2: Loss of Protected Trees

Implementation of this alternative would result in the disturbance or removal of mature cottonwood and willow trees measuring 91 cm (36 in) or more in circumference. Construction of the Morrison Creek/UPRR bridge would remove up to 10 mature willows and six mature cottonwoods, and may shade smaller trees after construction is complete. Affected trees would include two cottonwoods in seasonal wetland feature 2; willows and cottonwoods in freshwater marsh features 3, 4, and 6; one or two cottonwoods in drainageway feature 9; and one or two cottonwoods in agricultural ditch feature 12. Project construction would directly remove or injure the trees located within the proposed road footprint.

The City Heritage Tree Ordinance protects native oaks measuring 91 cm (36 in) or more in circumference. If the proposed action is not constructed for several years, the native oak trees located west of Franklin Boulevard in the Trail of Trees at the SRCSD Bufferlands could become large enough to be protected under this ordinance. As noted above, however, the City reviews effects on smaller native oaks and may require mitigation by planting replacement trees (Pskowski 2002). Some of these trees would be within the project area and would be removed or damaged during construction.

The City Heritage Tree Ordinance additionally protects all trees measuring 91 cm (36 in) or greater in circumference in a riparian zone. The loss of mature willow and cottonwood trees would therefore also result in a loss of locally protected trees. The loss of or damage to trees near Morrison Creek would adversely affect riparian vegetation and would potentially adversely affect raptor nests (see discussion in section 3.19, "Wildlife").

The loss of native oaks and up to 16 mature riparian trees would conflict with local ordinances protecting native oak and riparian trees. The direct, permanent impact of loss of these trees

would be considered significant. Mitigation Measures VEG-2 and VEG-3 would reduce this impact to a less-than-significant level.

Impact WLD-1: Disturbance of Nesting Migratory Birds, Including Raptors

Several non-special-status migratory birds, including raptors, could potentially nest in riparian forest and isolated trees throughout the study area, as well as in annual grasslands. The occupied nests and eggs of these birds are protected by federal and state laws, including the MBTA and California Fish and Game Code Sections 3503 (active bird nests) and 3503.5 (active raptor nests). DFG is responsible for overseeing compliance with the codes and makes recommendations on nesting bird and raptor protection. Raptors such as red-tailed hawk, red-shouldered hawk, and great horned owl nest in riparian forest, while northern harriers and western burrowing owls nest in annual grasslands. Migratory birds such as American goldfinch, house wren, Bewick's wren, and black-throated hummingbird commonly nest in riparian vegetation along Morrison Creek. The breeding season for these species is generally from February 1 to August 15. An active red-tailed hawk nest was observed within the project area during field surveys in April 2001. Other stick nests were observed in trees in the vicinity of the project area during the November and December 2001 and January 2002 field surveys.

Implementation of this alternative would result in the possible loss of nesting birds, including raptors, if occupied nests are removed during the breeding season (generally between February 1 and August 15) or nesting birds are disturbed. This disturbance could cause death of young or loss of reproductive potential at active nests. Effects on nesting migratory birds and raptors would be considered adverse if the subsequent population declines were large and affected the viability of the local populations. The proposed action could affect up to 150 acres of grassland habitat and 12 mature cottonwood and up to 10 willow trees in riparian habitat at the project site. Grasslands provide nesting habitat for special status birds, such as northern harriers and western burrowing owls, as well as non-special status birds, such as meadowlarks. Trees could provide nesting habitat for non-special-status migratory bird and raptor species, including American goldfinch, house wren, Bewick's wren, black-throated hummingbird, red-tailed hawk, red-shouldered hawk, and great-horned owl. These generally common species are locally and regionally abundant. Removal or disturbance of a small amount of nesting habitat for non-special-status migratory birds and raptors would not constitute an adverse impact. However, construction activities occurring at the project site during the breeding season that result in death of young or loss of reproductive potential would violate California Fish and Game Code Sections 3503 and 3503.5 and the MBTA. This impact would be considered significant. Mitigation Measure WLD-1 would be implemented to reduce this impact to a less-than-significant level.

Impact TES-1: Temporary, Indirect Increased Sedimentation in Suitable Habitat for Vernal Pool Invertebrates

Suitable habitat for vernal pool fairy shrimp (federally threatened), mid-valley fairy shrimp (federally proposed), California linderiella (federal species of concern), and vernal pool tadpole shrimp (federally endangered) occurs in seasonal emergent wetland features 1 and 5. Wetland 1 is located approximately 150 feet from the construction corridor and 250 feet from the edge of the roadway to be constructed, and the elevation of the road (based on current design) is approximately 2 feet higher than the edge of the wetland. Wetland 5, which has an area of 0.4 acre, is located more than 500 feet outside the construction corridor and would not be affected by construction activities. Potential indirect effects on listed vernal pool invertebrates could occur

because of increased sedimentation from soil erosion into seasonal emergent wetland feature 1 or hazardous materials entering wetland 1 after the road is completed. The road design will direct all stormwater runoff into the storm drain system, which will not drain north, and away from the wetland. With implementation of the erosion control measures in the SWPPP this impact would be considered less than significant. Implementation of Mitigation Measures TES-1 to TES-3 would further reduce the potential for this impact.

Impact TES-2: Mortality or Disturbance to Valley Elderberry Longhorn Beetle

Elderberry shrubs provide habitat for VELB (federally threatened). Thirty-three elderberry shrubs that have potential to support VELB were identified by Jones & Stokes biologists in the project area (Figure 3.20-2, Chapter 3). Shrubs were considered to have potential to support VELB if they had stems larger than 1 inch in diameter (U.S. Fish and Wildlife Service 1999). Twenty-six of these shrubs would be directly affected (i.e., removed) by the proposed action, and seven would potentially be indirectly affected because they are located 6.1 to 30.5 m (20 to 100 ft) from the construction easement. Direct and indirect impacts could result in mortality or disturbance to VELB. This impact would be considered significant. Mitigation Measures TES-1, TES-2, TES-4, and TES-5 would reduce this impact to a less-than significant level.

Impact TES-3: Loss of Habitat for Giant Garter Snake

Morrison Creek and Union House Creek provide potential aquatic habitat for giant garter snakes (federally and state threatened) in the project area. The upland habitat consists of annual grassland, agricultural lands, and levees. Giant garter snakes occurring within the construction corridor could be harmed or killed by the construction of the Morrison Creek overcrossing. Construction equipment could crush snakes, snakes could be buried in collapsed burrows, fuel spills in Morrison Creek or Union House Creek could kill snakes or could kill its prey base, or hibernating snakes could be driven from their burrows by construction activities. In addition, construction of the bridge piers for the overcrossing would result in permanent loss of habitat.

A total of 3.108 acres of upland habitat will be temporarily affected and 0.077 acre of upland habitat will be permanently affected by the project, and 0.136 acre of aquatic habitat will be temporarily affected and 0.002 acre of aquatic habitat will be permanently affected by the project. This impact would be considered significant. Mitigation Measures TES-1, TES-2, TES-6, and TES-7, as well as implementation of control measures in the project stormwater pollution prevention plan (SWPPP), would reduce this impact to a less-than significant level.

Impact TES-4: Potential Harm or Mortality of Northwestern Pond Turtles

Northwestern pond turtles (a state species of special concern and federal species of concern) could inhabit creeks within the project area. Western pond turtles also use adjacent upland habitats for hibernation and cover. Population declines of this species have been attributed to a variety of factors, including habitat loss from urbanization, water projects, and agricultural conversion. This species is subject to further population declines as a result of continued loss and disturbance of occupied habitat. Although there are records that document western pond turtles in the vicinity of the proposed project (California Natural Diversity Database 2001), there are no records of observations within the corridor itself, nor were turtles observed during surveys. However, suitable habitat for western pond turtles was identified at several sites during field surveys, including Union House Creek and Morrison Creek. Construction activities could result in the harm or death of western pond turtles occurring within the construction corridor. This

impact would be considered significant. Implementation of the Mitigation Measure TES-1, TES-2, TES-6, and TES-8 would reduce this impact to a less-than-significant level.

Impact TES-5: Disturbance of Nesting Swainson's Hawks and Loss of Swainson's Hawk Foraging Habitat

Suitable nesting and foraging habitat for Swainson's hawks (state-listed as threatened) exists throughout much of the project area. Examination of existing data from the CNDDB and other sources, as well as field surveys, indicates the presence of active nest sites within 0.8 km (0.5 mi) of the construction easement (Figure 3.20-3a and 3b, Chapter 3). Although suitable nesting habitat exists within the construction easement (e.g., riparian vegetation along Morrison Creek, the Sacramento River, and smaller drainages), no active nests were found in the construction easement. However, active nests may be established in the construction easement during the time period of the project. Suitable grassland and agricultural foraging habitat is located along much of the corridor and is subject to permanent and temporary disturbances from the construction of the roadway. Impacts on foraging have been calculated by assuming permanent loss of all grassland and agricultural habitats in the road easement. In addition, noise and other construction-related disturbances may affect nesting Swainson's hawks in the vicinity of the construction corridor during the breeding season (March through August). A number of mature willow and cottonwood trees that could provide potential nesting habitat are expected to be removed as a result of construction-related activities. Construction of the Morrison Creek/UPRR bridge would remove up to 10 mature willows and six mature cottonwoods, and may shade smaller trees after construction is complete. Affected trees would also include two cottonwoods in seasonal wetland feature 2; willows and cottonwoods in freshwater marsh features 3, 4, and 6; one or two cottonwoods in drainageway feature 9; and one or two cottonwoods in agricultural ditch feature 12. The removal of these trees along with disturbances of nest sites and the permanent loss of up to 6.4 ha (16 ac) of agricultural land and annual grassland that provide foraging habitat within the footprint of the road may contribute to continuing local and statewide declines of Swainson's hawk. This impact would be considered significant. Implementation of the following Mitigation Measures VEG-2, VEG-3, TES-1, TES-2, TES-9, and TES-10 would reduce this impact to a less-than-significant level.

Impact TES-6: Disturbance of Nesting Special-Status Birds and Loss of Foraging Habitat

Suitable nesting and foraging habitat for several special-status birds (double-crested cormorant, white-faced ibis, white-tailed kite, northern harrier, Cooper's hawk, western burrowing owl, loggerhead shrike, and tricolored blackbird) is located throughout much of the project area. Examination of existing data from the CNDDB and other sources, as well as field surveys, indicates the presence of double-crested cormorant, white-tailed kite, northern harrier, and western burrowing owl, and loggerhead shrike within the construction easement. Nesting of several of these species in adjacent lands is documented (Figure 3.20-1, Chapter 3) (California Natural Diversity Database 2001). Double-crested cormorant, white-faced ibis, white-tailed kite, Cooper's hawk, loggerhead shrike, and tricolored blackbird could nest, roost, or forage in riparian, woodland, and open water habitats along Union House Creek, Morrison Creek, the Sacramento River, and smaller drainages along the project corridor. Burrowing owl and northern harrier could use agricultural and grassland areas throughout the corridor.

Disturbances of nest sites by noise and other construction-related disturbances and losses of foraging habitat may cause nest failure or a reduction of available habitat, potentially contributing to local and regional declines of these species. This impact would be considered significant. Implementation of Mitigation Measures TES-1, TES-2, TES-9, TES-10, and TES-11 would reduce this impact to a less-than-significant level.

Build Alternative B: Franklin to Freeport South Alignment

Impacts would be the same as for Build Alternative A, except for the following.

Impact WTL-1: Permanent Direct Loss of Seasonal Emergent Wetland

Construction of this alternative would result in the loss of seasonal emergent wetland in wetland feature 2 and wetland feature 11. This impact would be considered significant. Mitigation Measures WTL-1 and WTL-2 would reduce this impact to a less-than-significant level.

No-Build Alternative (No Project)

Under the No-Build Alternative, there would be no effects on biological resources from construction or operation of the proposed project.

4.10.4 Biology Avoidance, Minimization and Mitigation Measures

Mitigation Measure WTL-1: Avoid or Minimize Indirect Impacts on Wetlands

Orange construction barrier fencing will be installed to identify and help protect ESAs. The construction specifications will require that a qualified biologist identify sensitive biological habitat onsite and identify areas to avoid during construction. Sensitive biological habitat is identified as habitat and potential habitat for listed species (e.g., vernal pool fairy shrimp, vernal pool tadpole shrimp, mid-valley fairy shrimp, VELB, giant garter snake), as well as habitat for non-listed species (e.g., drainages, riparian vegetation, trees) as identified by the biologist. The ESAs will be identified by a qualified biologist on the construction drawings before bid documents are released. The following paragraph will be included in the construction specifications:

> The Contractor's attention is directed to the areas designated as "Environmentally Sensitive Areas." These areas are protected, and no entry by the Contractor for any purpose will be allowed unless specifically authorized in writing by the City and Caltrans. The Contractor will take measures including giving written notice to employees and subcontractors to ensure that Contractor's forces do not enter or disturb these areas.

Temporary fences around the ESAs will be installed as the first order of work. Temporary fencing will be 1.2 m (4 ft) high, commercial-quality woven polypropylene, orange in color, and will be installed around the following sensitive biological resources to be avoided:

1. Delineated wetlands within 76.2 m (250 ft) of the construction area
2. Delineated wetlands in the construction area (to be placed at the edge of the 30.5-m-wide [100-ft-wide] construction zone)

This fencing will protect existing resources and prevent encroachment by construction vehicles and personnel. The exact location of the fencing will be determined by a qualified biologist with

the goal of protecting sensitive biological resources. The fencing will be tightly strung on posts with a maximum 3-m (10-ft) spacing. The fencing will be installed in a manner that prevents any equipment from extending the work area unnecessarily beyond the area necessary to complete the work. Temporary fences will be furnished and constructed, inspected weekly, maintained, and later removed, as shown on the plans, as specified in the special provisions, and as directed by the project engineer. The contractor shall prohibit any storage, parking, or construction staging within 76.2 m (250 ft) of avoided delineated wetlands.

The biologist will inspect the project site weekly during ground-disturbing activities and monthly after ground-disturbing activities until project construction is complete. Biological inspection reports will be filed with the City, Caltrans and USFWS. The reports will include any notices of violations given to the contractor during construction.

Mitigation Measure WTL-2: Compensate for Loss of Wetlands

The City of Sacramento will purchase mitigation credits to compensate for the direct loss of seasonal emergent wetland and freshwater marsh/drainageway habitat within the road footprint and indirect loss of freshwater marsh habitat within the bridge footprint. Compensation for the riparian component of these wetlands will include on-site tree planting (refer to section 3.18, "Vegetation").

Seasonal emergent wetland feature 2, freshwater marsh wetland features 3, 4, 6, and 8, and drainageway feature 9 are minimally disturbed, relatively high functioning wetlands and will be mitigated at a 2:1 ratio. Seasonal emergent wetland feature 11 is located within actively cultivated agricultural land, supports minimal vegetation, and is subject to plowing on a regular basis. Due to the lower habitat value of wetland feature 11, it will be mitigated at a 1:1 ratio. Mitigation costs are estimated at approximately $20,000 per acre at an approved mitigation bank. Based on the ratios described above and the impacts identified in Table 3.17-1, the cost of mitigation would range from approximately $30,000 to $35,000.

Mitigation Measure VEG-1: Prevent the Introduction or Spread of Noxious Weeds

The contractor will be responsible for avoiding the introduction of new noxious weeds and the spread of weeds previously documented at the project site. Accordingly, the following measures will be implemented during construction.

1. Educate construction supervisors and managers on weed identification and the importance of controlling and preventing the spread of noxious weed infestations.
2. Minimize surface disturbance to the greatest extent possible.
3. Seed all disturbed areas with certified weed-free native and nonnative mixes, as provided in the revegetation plan developed in cooperation with DFG. Mulch with certified weed-free mulch. Rice straw may be used to mulch upland areas.
4. Clean equipment before entering or exiting the project area.
5. Use native, noninvasive species or nonpersistent hybrids in erosion control plantings to stabilize site conditions and prevent invasive species from colonizing.

6. Provide all seed mixes to be used on SRCSD property to SRCSD Bufferlands staff for review and approval prior to use.

Mitigation Measure VEG-2: Protect Trees to Be Avoided by Construction

Prior to construction, the City will ensure that a certified arborist shall identify and map trees to be saved and this information shall be provided to the contractor to ensure that trees to be saved are not harmed. Before any ground-disturbing activity, the contractor will be required to install a minimum 1.2-m-tall (4-ft-tall) commercial-quality woven orange polypropylene construction fence around the driplines of oak trees and riparian vegetation in the construction area. This fencing will protect existing resources and prevent encroachment by construction vehicles and personnel. The exact location of the fencing will be determined by a qualified biologist with the goal of protecting sensitive biological resources. The fencing will be strung tightly on posts with a maximum 3-m (10-ft) spacing. The fencing will be installed in a manner that prevents any equipment from extending the work area unnecessarily beyond the area necessary to complete the work. The fencing will be checked and maintained weekly until all construction is completed.

Mitigation Measure VEG-3: Compensate for Loss of Protected Trees

Removal of mature native riparian trees, which include willows or cottonwoods that measure 15.2 cm (6 in) dbh or more, will be avoided near Morrison Creek to the maximum extent possible. The City will compensate for the loss of mature native trees removed for construction or shaded as a result of the overpass construction at a 1:1 ratio of dbh (one inch of dbh planted for inch of dbh removed). A planting plan prepared by a licensed landscape architect who has experience with riparian plantings in the Sacramento area will be required. Replacement trees will be of the same species as those removed and will be planted as close to the original location of the removed trees as feasible. The City will monitor the planted trees annually for 5 years, with a goal of 80% survival. If fewer than 80% of the replacement trees have survived at the end of the 5-year monitoring period, replanting and an additional 5 years of monitoring will be conducted.

Before project construction begins, the City will provide a qualified botanist or arborist to survey the affected oak trees in the Trail of Trees west of Franklin Boulevard to record an accurate location, species, size (dbh), and canopy diameter. This information will be submitted to the City Tree Services Department for review. Replacements are generally required on an inch-for-inch diameter basis (Pskowski 2002). The City will mitigate for removal of protected trees by transplanting the trees or planting oak trees on an inch-for-inch replacement basis near the original location in the Trail of Trees. Grading within the driplines of protected trees will be avoided wherever feasible. If grading must occur within the driplines of protected trees, replanting mitigation for these indirectly affected trees will be the same as that for removed trees (i.e., replacement based on an equal number of inches of dbh will be planted near the original location). Monitoring requirements will be for 5 years as described above for native riparian trees.

Mitigation Measure WLD-1: Avoid Impacts on Nesting Migratory Birds, Including Raptors

Because construction activities would occur during the breeding season for migratory birds and raptors (generally, February 1 through August 15), a qualified biologist will conduct a survey before the start of construction activities to determine whether active nests are present within

0.4 km (0.25 mi) of the project site. If an active nest is found in this area, the City will contact DFG to determine the need for a no-disturbance buffer or the need to monitor the nest. Removal of any nest trees is expressly prohibited.

If tree and shrub removal is required, removal should be conducted only outside the breeding season for migratory birds and raptors (generally, February 1 through August 15) (generally, trees can be removed from August 16 through January 31). If tree or shrub removal is required during the breeding season, the City will hire a qualified biologist before removal to conduct surveys for active migratory birds and raptor nests in the trees. If active migratory bird or raptor nests are found in the trees proposed for removal, the City will consult DFG before tree removal to develop an MOU to promote the conservation of migratory bird populations.

Mitigation Measure TES-1: Environmental Education Program

1. The applicants shall include a copy of the USFWS biological opinion within its solicitations for design and construction of the proposed project making the primate contractor responsible for implementing all requirements and obligations included within the biological opinion, and to educate and inform all other contractors involved in the project as to the requirements of the biological opinion. A copy of the solicitations containing the biological opinion also will be provided to the Chief of Endangered Species (Central Valley) at USFWS.
2. At least 30 days prior to initiating construction activities, the project proponents shall submit the names and curriculum vitae of the biological monitor(s) for the proposed project.
3. An environmental education program that focuses on the importance of onsite biological resources, including special status species, will be developed and implemented. All construction personnel, including contractors, will receive this Service-approved environmental awareness training, which will be conducted by a Service-approved biologist. The training will include information on the special status species, including the snake, the beetle, and the listed vernal pool crustaceans, the required avoidance and minimization measures to avoid take of these species and their habitats, and possible penalties for not complying with the requirements. The Service-approved biologist will inform all construction personnel about the life history of these special status species, the importance of onsite habitats for these species, and the terms and conditions of this biological opinion. Written documentation of the training must be submitted to the Sacramento Fish and Wildlife Office within 30 days of the completion of training. As needed, training shall be conducted in Spanish for Spanish language speakers.

Mitigation Measure TES-2: Avoid and Minimize Indirect Impacts on Special-Status Wildlife Species

1. The project proponents will ensure that the temporary loss of giant garter snake, valley elderberry longhorn beetle, and vernal pool crustacean habitat is confined to the proposed project site. Prior to the commencement of construction activities, high visibility fencing that is at least 5 feet tall will be erected around the habitats of these federally listed species to identify and protect these designated ESAs from encroachment of personnel and equipment. These areas will be avoided by all construction personnel. The fencing shall be inspected before the start of each work day and maintained by the project proponents until completion

of the project. The fencing may be removed only when the construction of the project is completed.

a. Fencing will be established at least 200 ft from the edge of aquatic snake habitat.

b. Fencing will be established at a minimum setback of 20 feet from the dripline of each elderberry shrub that is within 100 feet of the proposed project alignment.

c. Fencing will be established at a minimum distance of 250 feet from the edge of vernal pool habitat.

2. Signs will be posted every 50 feet along the edge of ESAs, with the following information: "This area is habitat of federally-threatened and/or endangered species, and must not be disturbed. These species are protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." The signs should be clearly readable from a distance of 20 feet, and must be maintained for the duration of construction.

3. After construction activities are complete, any temporary fill or construction debris shall be removed and disturbed areas restored to their pre-project conditions.

4. A Service-approved biologist will inspect construction-related activities at the project site where threatened and endangered species are located (i.e., Morrison Creek bridge and the Cosumnes River Boulevard/Franklin Road intersection) to ensure that no unauthorized take of federally listed species or destruction of their habitat occurs. The biologist will have the authority to stop construction activities that may result in such take of species or destruction of habitat until appropriate corrective measures have been completed. The biologist will be required to immediately report any unauthorized impacts to the Service.

5. Any unauthorized deviation from these proposed conservation measures will be reported within one (1) working day of its discovery to the Division Chief of Endangered Species at the Sacramento Fish and Wildlife Service Office. Written notification to the Service must be made within three (3) calendar days and include the date, time, and precise location of the event on a 7.5-minute quadrangle, and any other pertinent information. In addition, color photographs shall document the incident and be included in the written notification.

6. Measures consistent with the current Caltrans' Construction Site Best Management Practices (BMPs) Manual, including the Storm Water Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) Manuals, will be implemented to minimize effects to the snake during construction. Best management practices will be implemented to prevent sedimentation from entering ESAs and to reduce erosion, dust, noise, and other deleterious aspects of construction related activities. These BMPs may include, but are not limited to, silt fencing, temporary berms, restrictions on cleaning equipment in or near ESAs, installation of vegetative strips, and temporary sediment disposal. Runoff from dust control and hazardous materials will be retained on the construction site and prevented from flowing into the ESAs.

7. During construction operations, the number of access routes, number and size of staging areas, and the total area of the proposed project activity will be limited to the minimum necessary. Routes and boundaries will be clearly demarcated. Movement of heavy equipment to and from the project site will be restricted to established roadways to minimize habitat disturbance. Project-related vehicles shall observe a 20-mile-per-hour speed limit

within construction areas, except on City and County roads and on County, State, and Federal highways. This is particularly important during periods when the snake may be sunning or moving on roadways. All heavy equipment, vehicles, and supplies will be stored at the designated staging area at the end of each work period.

8. During construction operations, stockpiling of construction materials, portable equipment, vehicles, and supplies will be restricted to the designated construction staging areas and exclusive of the ESAs. The applicant will ensure contamination of habitat does not occur during such operations. All workers will be informed of the importance of preventing spills and appropriate measures to take should a spill occur.

Mitigation Measure TES-3: Avoid Indirect Impacts on Listed Vernal Pool Invertebrates

1. Prior to the initiation of construction activities, the project proponent shall compensate for indirect effects to the habitat of listed vernal pool crustacean by purchasing the equivalent of 1.0 acre of vernal pool habitat preservation credits within a Service-approved preservation bank.

2. The applicant shall ensure that activities that are inconsistent with the maintenance of the suitability of vernal pool crustacean habitat and the associated on-site watershed are prohibited. These include, but are not limited to (1) the alteration of existing topography that may alter hydrology into habitat for Federally-listed vernal pool crustaceans; (2) the placement of any new structures within suitable habitat; (3) dumping, burning, and/or burying of rubbish, garbage, or any other wastes and fill materials; (4) the placement of stormwater drains; (5) fire protection activities not required to protect existing structures at the proposed project site; and (6) use of pesticides or other toxic chemicals.

Mitigation Measure TES-4: Avoid Impacts on Valley Elderberry Longhorn Beetles

1. Project construction shall be prohibited within 100 feet of the elderberry plants during the beetle emergence and mating period (*e.g.*, March 15 through June 15) to eliminate any indirect effects of construction on the beetle or its eggs.

2. No application of herbicides, insecticides, and/or other chemical agents shall occur within 100-feet of the elderberry plants or where they might drift or wash into the area of the elderberry plants.

Mitigation Measure TES-5: Compensate for Direct Impacts on Valley Elderberry Longhorn Beetles

1. The 26 elderberry shrubs, which are located within 20 feet of the centerline of the proposed alignment of the project and cannot be avoided, shall be transplanted to a Service-approved conservation area. Transplanting must occur while the elderberry plants are dormant, between November and the first two weeks of February, after they have lost their leaves. The Service will be consulted prior to transplantation and a Service-approved biologist will monitor the transplanting activities. These shrubs will be transplanted according to the Service's July 9, 1999 *Conservation Guidelines for the Valley Elderberry Longhorn Beetle* (Beetle Conservation Guidelines; Service 1999a).

    a. The planting area shall be at least 1,800 square feet for each elderberry transplant. The elderberry shrubs shall be cut back to six feet from the ground or to 50 percent of its

height—whichever is taller. The remaining trunks will be removed using a tree spade, backhoe, front loader, or other suitable equipment. The trunks and all stems measuring one inch or greater in diameter will be replanted at the conservation site as soon as possible. Care will be taken to ensure than the soil is not dislodged from the roots of the plants. The shrubs will be planted in an excavated hole approximately three to four feet deep, and will be planted so that the top of the rootballs are level with the surrounding ground surface.

b. After the shrubs are planted, the soil will be saturated with water. Fertilizers or other supplements will not be used in the conservation site and pruning treatments will not be used on the shrubs because the effects of these substances on the beetle are not known. The manager of the conservation site will be responsible for any further maintenance and monitoring of the transplanted elderberry shrubs and the planting, maintenance, and monitoring of elderberry seedlings and associated native plants.

2. Prior to groundbreaking activities at the project site, the project proponents will purchase the equivalent of 26.0 beetle habitat credits at a Service-approved conservation bank. At least 111 rooted elderberry seedlings and 111 associated native plant species will be planted. The minimum area required is 0.92 acre (39,960 square feet) to ensure that no more than five elderberry seedlings and five associated native plants are planted per 1,800 square feet.

3. The conservation area shall be managed and monitored in perpetuity as outlined in the Beetle Conservation Guidelines. This includes the management and monitoring of the conservation area for either ten (10) consecutive years or seven (7) years over a 15-year period, with monitoring reports submitted for each monitoring year. Additionally, a management plan must be prepared which describes the long-term protection of this conservation area in order to protect the area in perpetuity as habitat for the valley elderberry longhorn beetle.

4. Seven additional elderberry shrubs adjacent to the proposed construction right-of-way will not be removed from the project site. These shrubs are between 20 ft (6 m) and 100 ft (30.5 m) of the proposed project alignment. The project proponent will install protective fencing a minimum of 20 ft (6 m) outside the perimeter of the driplines of these elderberry plants prior to initiating any construction activities on the site. Signs will be posted every 50 feet along the edge of the avoidance area, stating that the area is protected habitat. These buffer areas shall be protected from adverse effects resulting from the project. There will be no physical alterations of any type within the area enclosed by the fencing. Protective fencing shall be removed following project completion.

5. A post-construction walkthrough will be conducted to assess whether any damage occurred to vegetation within the buffer areas. Damage may include accidental cutting of vegetation or visible physical damage to roots, stems, and leaves. If damage is observed, vegetation within the buffer areas will be restored with appropriate native plant species. Erosion control measures and exotic weed abatement measures shall be implemented. If unanticipated damage is done to elderberry shrubs, the Service will be notified and appropriate compensation will be implemented.

Mitigation Measure TES-6: Avoid Impacts on Giant Garter Snakes

1. The project proponents will conduct construction activity within giant garter snake habitat (*e.g.* aquatic, upland, and rice habitat) between May 1 and October 1. This is the active

period for the snake and direct mortality is lessened, because snakes are expected to actively move and avoid danger. If it appears that construction activity may go beyond October 1, the project proponents will contact the Service as soon as possible and no later than September 15 to determine if additional measures are necessary to minimize take. Construction activities within 200 feet (61 m) from the banks of snake aquatic habitat will be avoided during the snake's inactive season.

2. Aquatic habitat will be dewatered 15 days prior to the initiation of construction activities. If complete dewatering is not possible, potential snake prey (*i.e.,* fish and tadpoles) will be removed so that snakes and other wildlife are not attracted to the construction area.
3. At most 24-hours before the start of construction activities, the project site will be surveyed for giant garter snakes by a qualified biologist. Surveys of the project area will be repeated if a lapse in construction activity of two weeks or greater occurs.
4. If excavation within the Morrison Creek channel is necessary, excavation for removal of accumulated sediments will be done by using equipment located on and operated from the top of the bank.
5. A qualified, Service-approved biologist will be available for monitoring throughout all phases of construction that may result in adverse affects to the giant garter snake. If giant garter snakes are observed in the construction area, the on-site monitoring biologist will have the authority to stop construction activities in the immediate area until appropriate corrective measures have been completed or it is determined that the snake will not be harmed. The biologist will redirect construction activities away from the snake, so that the snake will be allowed to move away from the work area on its own volition. The biologist will report any snakes encountered and any incidental take of the snakes to the Chief of the Endangered Species Division of the Sacramento Fish and Wildlife Service Office immediately, within three (3) working days.
6. The project proponents will not place any plastic, monofilament, jute, or similar erosion control matting that could entangle giant garter snakes on the project site within 250 feet of giant garter snake habitat.
7. To eliminate an attraction to predators of the snake, all food-related trash items, such as wrappers, cans, bottles, and food scraps, must be disposed of in closed containers and removed at least every other day from the entire project site.
8. After completion of construction activities, the project proponents will remove any temporary fill and construction debris. The project proponents will restore all temporarily affected snake habitats, including aquatic habitat and upland habitat. The project proponents will restore all snake habitat subject to temporary ground disturbances, including storage and staging areas and temporary roads. These areas shall be re-contoured, if appropriate, and re-vegetated with appropriate locally collected native plant species to promote restoration of the area to pre-project conditions. Appropriate methods and plant species used to re-vegetate such areas will be determined on a site-specific basis in consultation with the USFWS and DFG. Restoration work may include replanting emergent vegetation Refer to the Service's *Guidelines for the Restoration and/or Replacement of Giant Garter Snake Habitat* (Service 1997). A written report shall be submitted to the Service within ten (10) working days of the completion of construction at the project site.

9. The project proponents will maintain and monitor the project site for one year following the completion of construction and restoration activities. Monitoring reports documenting the restoration effort should be submitted to the Service upon the completion of the restoration implementation and one year after the restoration implementation. Monitoring reports should include photo-documentation, when restoration was completed, what materials were used, specified plantings, and justifications of any substitutions to the Service-recommended guidelines.

Mitigation Measure TES-7: Compensate for Direct Impacts on Giant Garter Snakes

In order to offset losses resulting from temporarily and permanently affected giant garter snake habitat, the applicant shall purchase off-site giant garter snake habitat credits from a Service-approved snake habitat conservation area servicing the area where the proposed project effects occur. All temporary effects will be compensated at a 1:1 ratio, and all permanent effects will be compensated at a 3:1 ratio, as provided for in the March 11, 2005 Biological Opinion. Prior to the initiation of construction activities, the project proponent will purchase snake habitat credits from a Service-approved snake conservation area to compensate for both temporarily affected and permanently affected snake habitat.

Mitigation Measure TES-8: Avoid Impacts on Northwestern Pond Turtles

To reduce potential impacts to northwestern pond turtles, the City shall retain a biologist to conduct a survey for northwestern pond turtles within 24 hours of the start of construction activities in suitable habitat located in the construction easement. If a turtle is found in the construction easement, the biologist shall try to passively move the turtle out of the area. If a turtle becomes trapped during construction activities in the waterway, a biologist shall remove the turtle from the work area and place it downstream of the construction easement. Seasonal construction restriction applicable to giant garter snakes will serve to protect hibernating northwestern pond turtles.

Mitigation Measure TES-9: Avoid Impacts on Nesting Swainson's Hawks

Swainson's hawks could establish nests in numerous locations that were not found to be active during initial surveys. Also, construction is expected to span multiple years. Therefore, a qualified biologist shall conduct preconstruction surveys each construction year to locate all active nest sites within 0.8 km (0.5 mi) of construction activities. A 0.4-km (0.25-mi) buffer zone around all known and suspected Swainson's hawk nests will be established. The 0.4-km (0.25-mi) buffer and a 91.4-m (100-yard [yd]) buffer shall be marked with specific identifiable flags. Construction shall be restricted to areas more than 91.4-m (100 yd) from active nests until after chicks have hatched in June. Vehicles shall be allowed to drive past the nest within that 91.4-m (100-yd) buffer zone, but shall not be allowed to stop. If, through consultation with the DFG, construction is allowed to occur within 0.4 km (0.25 mi) of an active nest, a biological monitor shall observe the nesting hawks for stressed/detrimental behavior that threatens nest success. If there appears to be a threat to nesting success resulting from construction activity within the 0.4-km (0.25-mi) buffer, work shall be halted until the hawk's behavior normalizes and the threat has dissipated. The most obvious and dangerous "detrimental behavior" occurs when the hawk is scared off the nest. If that occurs (even momentarily), construction shall stop immediately within 0.4 km (0.25 mi) of the nest for at least 1 hour after the hawk returns to the nest and her behavior appears to normalize. When construction resumes, if the hawk is scared off the nest a second time, the City's Contractor shall not resume construction within that 0.4-km (0.25-mi) zone until

having consulted with DFG to discuss further options. Other stressors/detrimental behaviors that the monitor shall look for include the hawk being off the eggs while still on the nest (e.g., circling/walking around the nest and calling). The biological monitor shall also watch for signs that the hawks are paying attention to construction instead of behaving normally (e.g., sitting calmly on the nest, watching out for or scaring away potential predators). When construction crews are within 0.4 km (0.25 mi) of an active nest, measures shall be taken to reduce the visibility of the humans to the greatest extent possible (e.g., work behind their vehicles, stay in their vehicles) because the appearance of people tends to disturb birds much more than vehicles and other machinery.

Mitigation Measure TES-10: Compensate for Loss of Swainson's Hawk Foraging Habitat

The City will mitigate for permanent impacts on 6.5 ha (16 ac) of foraging habitat by paying into a mitigation bank program approved by DFG. Costs for this mitigation are currently estimated at approximately $46,656 for 6.5 ha (16 ac) based on a rate of $2,916 per acre.

Mitigation Measure TES-11: Avoid Impacts on Nesting Special-Status Birds

Special-status birds could establish nests in numerous locations that were not found to be active during initial surveys. Also, construction is expected to span multiple years. Therefore, a qualified biologist shall conduct preconstruction surveys each construction year to locate all active nest sites within 0.4 km (0.25 mi) of the construction easement. Direct disturbance, including removal of nest trees and activities in the immediate vicinity of active nests, shall be avoided during the breeding season (March through August) where feasible. No-disturbance buffers shall be established around each active nest to avoid disturbing nesting birds where feasible. The size and configuration of buffers shall be based on the proximity of active nests to construction, existing disturbance levels, topography, the sensitivity of the species, and other factors, and shall be established through coordination with DFG representatives on a case-by-case basis. Where it is determined to be infeasible to schedule construction to avoid constructing within 0.4 km (0.25 mi) of an active nest, the City or its Contractor shall monitor nest status to determine whether construction is disturbing nesting activities. If it is determined by a qualified biologist that the construction is adversely affecting nesting activities, construction activities within 0.4 km (0.25 mi) shall cease pending completion of nesting activities.

Western burrowing owls are known to nest in the eastern portion of the study area along the Union House Creek levee. Potential habitat for Western burrowing owl in the west portion of the study area is located along Morrison Creek levee and along dirt roads in the SRCSD Bufferlands (Jones 2001). Western burrowing owls forage in grassland habitat in the project area. To avoid impacts on Western burrowing owl, a biologist will conduct a preconstruction survey for the owls along the project alignment plus a 75-m (250-ft) buffer on each side of the construction area. If Western burrowing owls are detected in the project area, the following measures will be implemented.

1. Occupied burrows will not be disturbed during the nesting season (February 1 through August 31).
2. When destruction of occupied burrows (outside the nesting season) is unavoidable, existing unsuitable burrows will be enhanced (enlarged or cleared of debris) or new burrows created

(by installing artificial burrows) at a ratio of 2:1 on the protected lands site. Newly created burrows will follow guidelines established by DFG.

3. If owls must be moved away from the project area, passive relocation techniques (e.g., installing one-way doors at burrow entrances) will be used rather than trapping. At least 1 week will be necessary to accomplish passive relocation and allow owls to acclimate to alternate burrows.
4. The City will prepare a monitoring plan and provide long-term management and monitoring of the protected lands. The monitoring plan will specify success criteria, identify remedial measures, and require an annual report to DFG.
5. If avoidance is the preferred method of dealing with potential impacts, no disturbance should occur within 50 m (160 ft.) of occupied burrows during the nonbreeding season (September 1 through January 31) and within 75 m (250 ft.) during the breeding season. Avoidance also requires that at least 2.6 hectares (6.5 acres) of foraging habitat, contiguous with occupied burrow sites, be permanently preserved for each pair of breeding Western burrowing owls or single unpaired resident bird. The configuration of the protected site will be submitted to DFG for approval.
6. Compensation measures will follow the guidelines provided in the DFG staff report regarding mitigation of impacts on Western burrowing owls (DFG 1995). The City will compensate for the loss of Western burrowing owl foraging habitat and for any occupied burrows that will be destroyed as a result of the proposed action. Before project approval and before construction begins, the City will compensate for the removal of 6.50 hectares (16 acres) of Western burrowing owl foraging habitat. The estimated cost of compensation would be covered under the Swainson's hawk mitigation costs as the two species have similar habitat requirements.

4.10.5 Cumulative Biology Impacts

Impact WTL-4: Cumulative Loss of Seasonal Emergent Wetland, Freshwater Marsh, Drainageways

Implementation of the project in combination with other local and regional projects would contribute to the cumulative loss of seasonal emergent wetland, freshwater marsh, drainageways in the project vicinity. The proposed project's contribution to these impacts would be considered significant. However, implementation of Mitigation Measures WTL-1 and WTL-2 will reduce this cumulative impact to a less-than-significant level.

Impact VEG-3: Cumulative Loss of Protected Trees and the Spread of Noxious Weeds in the Project Vicinity

Implementation of the proposed project in combination with other local and regional projects would contribute to the cumulative loss of protected trees and the spread of noxious weeds in the project vicinity. The proposed project's contribution to these impacts would be considered significant. However, implementation of Mitigation Measures VEG-1 to VEG-3 will reduce this cumulative impact to a less-than-significant level.

Impact WLD-2: Cumulative Loss of Nesting Migratory Birds

Implementation of the proposed project, in combination with other local and regional projects, could contribute to the cumulative loss of nesting migratory birds in the project vicinity. The proposed project's contribution to these impacts would be considered significant. However, implementation of Mitigation Measure WLD-1 would reduce this cumulative contribution to a less-than-significant level.

Impact TES 7: Cumulative Loss of Special-Status Vernal Pool Invertebrates, VELB, Giant Garter Snake Habitat, Northwestern Pond Turtle, Swainson's Hawk, and Special-Status Bird Nesting Habitat

Implementation of the proposed project, in combination with other local and regional projects, would contribute to the cumulative loss of special-status vernal pool invertebrates, VELB, giant garter snake habitat, northwestern pond turtle, Swainson's hawk, and special-status bird nesting habitat in the project vicinity. Additionally, the project would permanently increase the amount of noise and visual interference as well as increase the human presence in the project area. The proposed project's contribution to these impacts would be considered significant. Mitigation Measures TES-1 through TES-11 would reduce these cumulative impacts, but not to a less-than-significant level. These cumulative impacts are significant and unavoidable. The project is not anticipated to have a significant effect on or contribute to cumulative effects on special-status plants.

4.10.6 Findings

Impact	Significance Level	Significance Level after Mitigation
Impact WTL-1: Permanent Direct Loss of Seasonal Emergent Wetland	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: None*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*
Impact WTL-2: Permanent Direct Loss or Degradation of Freshwater Marsh	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: None*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*
Impact WTL-3: Loss of Vegetated Drainageway	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: None*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*
Impact WTL-4: Cumulative Loss of Seasonal Emergent Wetland, Freshwater Marsh, Drainageways	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: None*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*
Impact VEG-1: Introduction or Spread of Noxious Weeds	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: None*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*
Impact VEG-2: Loss of Protected Trees	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: None*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*
Impact VEG-3: Cumulative Loss of Protected Trees and the Spread of Noxious Weeds in the Project Vicinity	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: None*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*
Impact WLD-1: Disturbance of Nesting Migratory Birds, Including Raptors	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: None*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*
Impact WLD-2: Cumulative Loss of Nesting Migratory Birds	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: None*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*

Impact	Significance Level	Significance Level after Mitigation
Impact TES-1: Temporary, Indirect Increased Sedimentation in Suitable Habitat for Vernal Pool Invertebrates	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: None*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*
Impact TES-2: Mortality or Disturbance to Valley Elderberry Longhorn Beetle	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: None*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*
Impact TES-3: Loss of Habitat for Giant Garter Snake	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: None*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*
Impact TES-4: Potential Harm or Mortality of Northwestern Pond Turtles	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: None*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*
Impact TES-5: Disturbance of Nesting Swainson's Hawks and Loss of Swainson's Hawk Foraging Habitat	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: None*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*
Impact TES-6: Disturbance of Nesting Special-Status Birds and Loss of Foraging Habitat	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: None*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*
Impact TES 7: Cumulative Loss of Special-Status Vernal Pool Invertebrates, VELB, Giant Garter Snake Habitat, Northwestern Pond Turtle, Swainson's Hawk, and Special-Status Bird Nesting Habitat	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: None*	*Build Alternative A: SU* *Build Alternative B: SU* *No Build Alternative: None*

Notes: S = significant.
LTS = less than significant.
SU = significant and unavoidable.

4.11 Hazards

See the "Hazardous Waste/Materials" environmental setting section in Chapter 3 for a discussion of existing conditions and relevant plans and policies.

4.11.1 CEQA Impacts

Refer to the associated "Approach and Methodology" subsections in Chapter 3 for a description of the methods used to evaluate impacts.

4.11.2 Standards of Significance

The proposed action would have a significant impact if it would result in or expose people to potential impacts involving:

- A risk of accidental explosion or release of hazardous substances (including, but not limited to: oil, pesticides, chemicals or radiation)
- Possible interference with an emergency evacuation plan
- The creation of any health hazard or potential health hazard
- Exposure of people to existing sources of potential health hazards
- Increased fire hazard in areas with flammable brush, grass, or trees

4.11.3 Hazards Impacts

Build Alternative A: Franklin to Freeport North Alignment

Impact HAZ-1: Potential for Exposure of Previously Unknown Hazardous Wastes to Construction Workers and/or Nearby Land Uses

The project Initial Site Assessment indicates that the project area and surrounding properties generally have a low risk of presenting substantial impacts from hazardous materials or wastes and/or petroleum hydrocarbons. Previously unreported hazardous materials could be discovered during project construction. The City has committed to implement measures to address accidental exposure (see Section 3.22.5, "Hazards and Hazardous Materials Environmental Commitments"); however, the impact would be considered significant. Mitigation measures HAZ-1, HAZ-2, HAZ-3, HAZ-4, and AQ-2 (refer to section 4.8, "Air Quality") would reduce the impact to a less-than-significant level.

Impact HAZ-2: Potential for Exposure of Known Hazardous Materials to Humans or the Environment

The Initial Site Assessment indicates that the project area generally has a low risk of presenting substantial impacts from hazardous materials. However, the ISA did indicate the potential for hazardous materials in the form of aerially deposited lead (ADL), polychlorinated biphenyls (PCBs) in transformers, and heavy metals such as chromium and lead in yellow street striping. Construction may require the movement and/or disposal of materials containing some or all of these hazardous materials. The City has committed to implementing measures to address

accidental exposure (see Section 3.22.5, "Hazards and Hazardous Materials Environmental Commitments"); however, the impact would be considered significant. Implementation of Mitigation Measures HAZ-1, HAZ-2, HAZ-3, HAZ-4, and AQ-2 (see section 3.14, "Air Quality") would reduce the impact to a less-than-significant level.

Impact HAZ-3: Potential for Exposure of Humans and the Environment to Hazardous Conditions due to the Accidental Release of Hazardous Materials

Construction of the project would involve the use of heavy equipment, small quantities of hazardous materials (such as petroleum and other chemicals used to operate and maintain construction equipment), and larger quantities of potentially hazardous road construction materials (i.e., black-topping materials) that may result in hazardous conditions on site. The City has committed to implement measures to address exposure from accidental releases (see Section 3.22.5, "Hazards and Hazardous Materials Environmental Commitments"). The impact would be less than significant. No mitigation is required.

Impact HAZ-4: Potential Exposure of Construction Workers to Hazardous Concentrations of Asbestos-Containing Materials in the Stonecrest Avenue Overpass

Demolition of the existing Stonecrest Avenue overpass is required in order to construct the new interchange. Based on existing information, the structure does not have asbestos-containing materials. This direct, temporary impact would be not considered significant under CEQA. Mitigation Measure HAZ-5 would be implemented because the NESHAP notification applies any time demolition is proposed.

Impact HAZ-5: Potential Use of Contaminated Import/Borrow Material to Construct the Overcrossing

Construction of the new interchange and the structure over Morrison Creek may require the import of soil (borrow material) to construct the embankments. Although it is considered unlikely, it is possible that any imported soil could be contaminated with hazardous wastes, depending on the source of the material. This direct, permanent impact would be considered significant. Mitigation Measure HAZ-6 would be implemented to reduce this impact to a less-than-significant level.

Build Alternative B: Franklin to Freeport South Alignment

Impacts would be the same as for Build Alternative A

No Build Alternative (No Project)

The No-Build Alternative would not involve the use or potential unearthing of any hazardous materials because no construction or excavation would occur. With the No-Build Alternative there is no potential for exposure of humans or the environment to hazardous materials, in excess of whatever potential already exists.

4.11.4 Hazards Avoidance, Minimization and Mitigation Measures

Mitigation Measure HAZ-1: Sampling, Testing, Removal, Storage, Transportation, and Disposal of Yellow Striping along Existing Roadway

Yellow striping along Stonecrest will require removal for both Build Alternative A and Build Alternative B. If burial of pre-existing pavement by new paving is conducted, however, impacts

would be considered beneficial: the burial process would nearly eliminate leaching of the lead incurred from precipitation. However, if striping paint is to be removed or impacted in any manner, sampling and testing of the yellow striping scheduled for removal should be performed to determine the presence of lead and chromium. All aspects of the project associated with removal, storage, transportation, and disposal shall be in strict accordance with appropriate regulations from the Code of Regulations (CCR). Disposal of the stripes will be at a Class 1 disposal facility.

Mitigation Measure HAZ-2: Develop a Health and Safety Plan (HASP) to Address Worker Health and Safety

The amounts and levels of possible contamination relating to ADL and PCBs will be determined during the design phase. An ADL site investigation is required. As necessary, an HASP will be prepared to address worker safety when working with potentially hazardous materials, including, but not limited to potentially lead-bearing paint, transformer fluids, soils potentially containing ADL, and other construction related materials within Caltrans right-of-way for any soil disturbance.

Mitigation Measure HAZ-3: Sampling and Analysis of Transformer Fluid from Electrical Transformers

If leaks from electrical transformers that will either remain within the project construction zone or will require removal and/or relocation are encountered before or during construction, the transformer fluid should be sampled and analyzed by qualified personnel for detectable levels of PCBs. A PCB site investigation is required within Caltrans right-of-way for any soil disturbance. The owner of the transformers shall verify the contents of the transformer prior to relocation and take proper mitigation actions if required. If PCBs are detected, the transformer shall be removed and disposed of in accordance with regulatory agency requirements. Any stained soil encountered below electrical transformers with detectable PCB levels shall also be handled and disposed of in accordance with regulatory agency requirements.

Mitigation Measure HAZ-4: Testing for Aerially Deposited Lead (ADL) in Surface/Near-Surface Soils

A preliminary investigation and screening for ADL for portions of the project location immediately adjacent to I-5 to determine the levels of lead in the surface and near-surface soils will be performed during the design phase. Should ADL be encountered above the regulatory thresholds, these soils would be handled and/or disposed of in accordance with regulatory agency requirements.

Mitigation Measure HAZ-5: Comply with Caltrans Requirements to Demolish Bridge Structures

The contract specifications will include Caltrans bridge demolition specifications that deal with disposal, handling, and health and safety issues related to structure demolition and hazardous waste. The specifications will require the Contractor to prepare a bridge demolition notification form and attachments to be submitted to the California Air Resources Board and Sacramento Metropolitan Air Quality Management District a minimum of 30 days prior to demolition. A special provision that deals with disposal, handling, and health and safety would be required.

Mitigation Measure HAZ-6: Sampling and Analysis of Any Import/Borrow Material

Any material that may be imported for construction of the embankments for the interchange on I-5 or the Morrison Creek overcrossing will require approval for use and certification to be clear of actionable levels of hazardous waste. Testing may be required depending on the source location of the material.

4.11.5 Cumulative Hazards Impacts

With implementation of the mitigation measures included in this section, the project will not contribute to any cumulative hazardous impacts.

4.11.6 Findings

Impact	Significance Level	Significance Level after Mitigation
Impact HAZ-1: Potential for Exposure of Previously Unknown Hazardous Wastes to Construction Workers and/or Nearby Land Uses	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: None*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*
Impact HAZ-2: Potential for Exposure of Known Hazardous Materials to Humans or the Environment	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: None*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*
Impact HAZ-3: Potential for Exposure of Humans and the Environment to Hazardous Conditions due to the Accidental Release of Hazardous Materials	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*
Impact HAZ-4: Potential Exposure of Construction Workers to Hazardous Concentrations of Asbestos-Containing Materials in the Stonecrest Avenue Overpass	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: None*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*
Impact HAZ-5: Potential Use of Contaminated Import/Borrow Material to Construct the Overcrossing	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: None*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*

Notes: S = significant.
LTS = less than significant.
SU = significant and unavoidable.

4.12 Noise

See the "Noise" environmental setting section in Chapter 3 for a discussion of existing conditions and relevant plans and policies.

4.12.1 CEQA Impacts

Refer to the associated "Approach and Methodology" subsections in Chapter 3 for a description of the methods used to evaluate impacts.

4.12.2 Standards of Significance

City noise standards, in both the noise element and the City code, indicate that a noise impact is considered to be significant if:

- Construction activity would violate the noise limits specified in the Chapter 8.68 of the Sacramento City Code during hours when construction is not exempt from the code
- Operation of the project under design year conditions would result in an increase of 4 dB or more at residential uses relative to no-project design year conditions when the exterior noise level is greater than 60 L_{dn}
- Operation of the project under design year conditions would result in exceedence of Sacramento General Plan Update (SGPU) noise thresholds for residential uses, that is, it would result in a greater than 45 dB interior noise level and greater than 60 dB exterior noise level on existing residential uses in an area where the no-project design year noise levels are below the SGPU thresholds.

4.12.3 Noise Impacts

Build Alternative A

Impact NZ-1: Permanent Exposure to Operational Traffic Noise

To evaluate traffic noise conditions against City thresholds, the traffic noise modeling results must be expressed in terms of L_{dn} values as opposed to the worst-hour L_{eq} values used in the NEPA assessment in Chapter 3. L_{dn} values are 24-hour average values with a 10 dB penalty for noise that occurs at night (10:00 p.m. to 7:00 a.m.). Because a 24-hour noise metric is used and because train passages on the Union Pacific track west of Franklin Boulevard contribute substantially to the L_{dn} values in the area, the noise from trains is also considered in this assessment.

Currently, there are typically 12 train passages per day along the Union Pacific track with about half occurring during nighttime hours (Smith pers. comm.). The average speed of trains through the area is 40 mph (Smith pers. comm.). Train noise levels have been modeled using the Federal Railroad Administration train noise model. The model indicates that train noise in the area is 74 L_{dn} at (30.5 m (100 ft) from the track. Train noise levels throughout the adjacent neighborhood were predicted using a line source attenuation rate of 4.5 dB per doubling of distance.

Table 4.12-1 (similar to Table 3.15-5 in Chapter 3) summarizes the traffic noise modeling results combined with the train noise results expressed in terms of L_{dn} values. Table 4.12-1 also compares predicted noise levels to existing conditions and no project conditions. With regard to project-related increases in traffic noise, the results in Table 4.12-1 indicate that there is no case where an increase in noise of 4 dB or more relative to no-project conditions would occur where the no-project noise level exceeds 60 L_{dn}. In addition, implementation of the project is predicted to decrease traffic on Franklin Boulevard north of Cosumnes River Boulevard and increase traffic on Cosumnes River Boulevard east of Franklin Boulevard and on Franklin Boulevard south of Cosumnes River Boulevard. Where traffic is predicted to increase, the increases relative to no-project conditions are predicted to be no more than 1 dB. Accordingly, project-related increases in traffic noise are considered to be less than significant.

With regard to project-related exceedence of the City's exterior noise threshold, the results in Table 4.12-1 indicate that the predicted noise level under project conditions would exceed 60 L_{dn} at only one location (Receiver 7) where the no-project design year noise level is below 60 L_{dn}. The impact in the vicinity of the Receiver 7 would be considered significant. Mitigation Measure NZ-1 would reduce this impact to a less-than-significant level.

Impact NZ-2: Temporary Exposure to Construction Noise

During construction of the project, noise from construction activities may intermittently dominate the noise environment in the immediate area of construction (refer to Table 3.15-6 in Chapter 3). To minimize disruption of traffic flows on I-5 during work on the interchange, nighttime construction may be required. Construction equipment is expected to generate noise levels ranging from 70 to 90 dB at a distance of 15 m (50 ft). Noise produced by construction equipment will typically attenuate at a rate of about 6 dB per doubling of distance from the source. With buildout of North Delta Shores, located north of the project area, the closest residences are estimated to be approximately 500 feet from the area of potential active nighttime construction. Construction noise at this distance could therefore be in the range of 50 to 70 dBA. Based on these sources levels and the proximity of residences to roadway construction areas, construction noise has potential to exceed City noise ordinance standards if construction occurs outside the hours of 7:00 a.m. and 6:00 p.m. Monday through Friday between 9:00 a.m. and 6:00 p.m. on Sunday. Daytime noise ordinance standards could also be exceeded. This impact would be considered significant. Mitigation Measure NZ-2 would reduce this impact, but not to a less-than-significant level. The impact would therefore be considered significant and unavoidable, primarily because it may not be feasible to limit construction noise at some locations to below noise ordinance standards during nighttime hours.

Build Alternative B

Impacts would be the same as for Build Alternative A

No Build Alternative (No Project)

Under the No-Build Alternative, none of the above-described impacts would occur, and there would be no effects related to noise.

Table 4.12-1. Summary of Noise Impacts under CEQA (L_{dn})

Receivers	Type of Development	Existing Traffic and Train Noise Level (L_{dn})	Predicted Traffic Noise Level (L_{dn})		Increase (dB) Relative to Existing Conditions		Increase (dB) Relative to Future No Project Conditions	CEQA Significance Conclusion
			Future No Project	Build Alternatives[b]	Future No Project	Build Alternatives[b]		
R1	Residence	62	64	65	2	3	1	LTS
R2	Residence	63	65	66	2	3	1	LTS
R3	Residence	65	67	70	2	5	3	LTS
R4	Residence	64	66	68	2	4	2	LTS
R5	Residence	62	64	66	2	4	2	LTS
R6	Residence	66 (43)[a]	66 (45)	67 (60)	0	1	1	LTS
R7	Residence	57 (44)[a]	57 (46)	61 (59)	0	4	4	S
R8	Residence	54 (46)[a]	54 (48)	59 (58)	0	5	5	LTS
R9	Residence	53 (48)[a]	54 (50)	57 (56)	1	4	3	LTS
R10	Residence	53 (51)[a]	55 (54)	58 (57)	2	5	3	LTS
R11	Residence	56 (55)[a]	58 (57)	60 (60)	2	4	2	LTS
R12	Residence	65	68	69	3	4	1	LTS
R18	Residence	62	64	65	2	3	1	LTS
R19	Residence	62	64	65	2	3	1	LTS
R20	Residence	64	66	68	2	4	2	LTS
R21	Residence	65	67	69	2	4	2	LTS

[a] Values in parentheses are traffic noise only without train noise.
[b] Values are the same for both build alternatives.
Notes: Predicted traffic noise levels for Future No Project and Build Alternative conditions are based on the 2025 cumulative traffic scenario.
LTS = less than significant.

4.12.4 Noise Abatement Measures

Proposed Mitigation Measure NZ-1: Construct a Noise Barrier Along the North Side of the Alignment West of Franklin Boulevard

Implementation of a minimum 3.1-m-high (10-ft-high) wall, extending from Station 36+00 to 47+20 (west to east), as described in Chapter 3, would eliminate the significant noise impact identified at Receiver 7 (Table 4.12-1). As discussed in Chapter 3, the noise abatement design presented in this report is preliminary and has been conducted at a level appropriate for environmental review. Information on the physical characteristics of potential abatement measures (e.g., physical location, length, and height of noise barriers) is preliminary. The preliminary noise abatement design may be changed or eliminated from the final project design. Inclusion of noise barriers in the project design and the final design of those noise barriers, if included, will be decided based on the information contained in this report, final project design, and other pertinent information received during the public review process.

Mitigation Measure NZ-2: Employ Noise-Reducing Construction Practices

The City will employ noise-reducing construction practices such that noise from construction activities does not exceed City noise ordinance standards during applicable hours. Measures may include but are not limited to the following.

1. Noise-generating construction activity will be limited to the hours of 7:00 a.m. and 6:00 p.m. Monday through Friday, and between 9:00 a.m. and 6:00 p.m. on Sunday.
2. All equipment will have sound-control devices no less effective than those provided on the original equipment. No equipment will have an unmuffled exhaust.
3. Construction equipment staging and operation shall be conducted as far away from sensitive receptors as possible, particularly during nighttime operations
4. As directed by the City, the contractor will implement appropriate additional noise mitigation measures including, but not limited to, changing the location of stationary construction equipment, shutting off idling equipment, rescheduling construction activity, notifying adjacent residents in advance of construction work, or installing acoustic barriers around stationary construction noise sources or construction sites.

4.12.5 Cumulative Noise Impacts

The traffic noise modeling results presented in Table 4.12-1 represent cumulative noise conditions that are based on cumulative traffic conditions. These cumulative traffic conditions include the effect of the project alternatives. Implementation of either Build Alternative is predicted to result in a cumulatively considerable contribution to cumulative noise conditions that will exceed 60 Ldn at residential uses in Areas 1 and 2. An alternative's contribution is considered to be cumulatively considerable if it is greater than 1 dB relative to no project conditions. If a barrier is constructed along the north side of the alignment as indicated in Mitigation Measure NZ-1, the contribution of project alternatives to noise that exceed 60 Ldn would no longer be considerable in Area 1. At Area 2 where noise barriers are not feasible, the contribution of either Build Alternative to cumulative noise conditions would remain considerable.

4.12.6 Findings

Impact	Significance Level	Significance Level after Mitigation
Impact NZ-1: Permanent Exposure to Operational Traffic Noise	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: None*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*
Impact NZ-2: Temporary Exposure to Construction Noise	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: None*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*

Notes: S = significant.
LTS = less than significant.
SU = significant and unavoidable.

4.13 Public Services and Utilities

See the "3.6, Utilities and Emergency Services" environmental setting section in Chapter 3 for a discussion of existing conditions and relevant plans and policies.

4.13.1 CEQA Impacts

Refer to the associated "Approach and Methodology" subsections in Chapter 3 for a description of the methods used to evaluate impacts.

4.13.2 Standards of Significance

The proposed action would have a significant impact if it would:

- Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board
- 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
- Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects
- Not have sufficient water supplies available to serve the project from existing entitlements and resources, and new or expanded entitlements would be needed
- Result in a determination by the wastewater treatment provider that serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments
- Not be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs
- Not comply with federal, state, and local statutes and regulations related to solid waste
- Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or a 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 following public services:
  - Fire protection
  - Police protection
  - Schools
  - Parks
  - Other public facilities

4.13.3 Public Services and Utilities Impacts

Build Alternative A: Franklin to Freeport North Alignment

Impact UT-1: Interference with Existing Utility Infrastructure

Construction of this alternative could interfere with existing utility infrastructure, such as water lines and irrigation ditches, gas lines, electrical power and telephone lines, sewer mains, and drainage mains. Build Alternative A would cross known existing sewer and drainage mains in several locations. Construction activities for the proposed project would be coordinated with the City of Sacramento Department of Utilities to ensure that excavation would not affect existing drainage or sewer mains; however, the potential remains for damage to existing utility lines. This impact would be considered significant. However, Mitigation Measures UT-1 and UT-2 would reduce the impact to a less-than-significant level.

Impact UT-2: Interference with Law Enforcement, Fire Protection, and Emergency Medical Services during Construction

During construction, travel on Franklin Boulevard, Stonecrest Avenue, Beach Lake Road, and Freeport Boulevard could be temporarily disrupted. Traffic congestion could increase because of lane closures and possible road closures. Emergency vehicles that use this road could be hindered by traffic, and lane or road closures. This impact is temporary and construction related, and would be considered significant. Mitigation Measure UT-3 would reduce the impact to a less-than-significant level.

Impact UT-3: Generation of Solid Waste

Construction of this alternative would result in the generation of solid waste. The proposed action is to construct a new roadway in an area that does not have curbside solid waste pickup. However, the project proponent has provided in the project design that disposal of construction waste would be the responsibility of the construction contractor, who would be responsible for disposing of solid waste at an appropriate landfill. The quantity of solid waste generated would not significantly affect the capacity of area landfills. This impact would be considered less than significant. No mitigation is required.

Impact UT-4: Interfere with Planned Infrastructure

The proposed action is planned along portions of the same alignment as two other utility projects: the Lower Northwest Interceptor (LNWI) and Freeport Intake. Both projects have tentative plans to be started within the next few years. The LNWI project is planned to start construction in spring 2005. The Freeport Intake project is planned for probable start and completion within the next several years, possibly 2007-2009, but specific dates have not yet been determined. Additionally, the Sacramento Regional Transit District (RT) is constructing a 17.7-km (11-mi) extension of its light rail system from downtown Sacramento to Elk Grove. Environmental review and preliminary engineering for the second phase of the project, a segment of which is located is within the limits of the I-5/Cosumnes River Boulevard project area, is ongoing and anticipated to be completed in 2005. Depending on funding sources for LNWI and Freeport, and the environmental review progress for RT light rail, it is possible that construction of the proposed action could be concurrent with one or more of these projects, and thereby interfere with construction of the Freeport Intake, Lower Northwest Interceptor, or RT light rail. This impact would be considered significant. Mitigation Measure UT-4 would reduce this impact to a less-than-significant level.

Build Alternative B: Franklin to Freeport South Alignment

The impacts under this alternative would be the same as those described for Build Alternative A.

No Build Alternative (No Project)

This alternative would maintain existing conditions. Therefore, it would have no effect on utilities or emergency services. No impact would occur.

4.13.4 Public Services and Utilities Avoidance, Minimization and Mitigation Measures

Mitigation Measure UT-1: Notify Residents, Businesses, Emergency Services Personnel, and Service Providers of Public Service and Utilities Disruption

Affected businesses and residents will be notified when construction will start and once construction is underway. The City or its Contractor will ensure that affected businesses and residents are notified at least 1 week in advance of any lane or road closures, or disruptions of access. In addition, emergency response personnel, such as fire protection and law enforcement personnel, would be notified at least 1 week in advance of any lane or road closures so that alternate routes can be established. If any utility services, including water, wastewater, gas, and electric services, must be stopped during construction, service providers will provide advance notice to users. Construction activities will be designed and scheduled to minimize disruption of these services. Residents and businesses, including farms, will be notified 1 to 2 weeks before any planned disruptions to utility services.

Mitigation Measure UT-2: Adopt Utility Avoidance Measures Recommended by Underground Service Alert Evaluation

During the design phase of the proposed action, before breaking ground, the project proponent will solicit an evaluation of the alignment by Underground Service Alert (USA), which provides a free "Call Before You Dig" service to all excavators (contractors, homeowners, and others), in central/northern California. A call to USA will automatically notify all USA members who may have underground facilities at the work site. In response, the members will mark or stake the horizontal path of the underground facilities, provide information about them, or give clearance to dig. This service protects the construction team, public, and environment from injury and hazards and protects underground facilities from being damaged.

Mitigation Measure UT-3: Comply with Emergency Service Travel Needs and Evacuation Routes and Plans

Emergency service providers (law enforcement, fire protection, and ambulance services) will be notified of all construction activities, including any street closures, at least 1 week in advance. If any lane or street closures would hinder emergency services to a level deemed unacceptable by emergency service authorities, alternatives will be considered to comply with emergency service needs.

Mitigation Measure UT-4: Coordinate Construction Activities to Reduce Interference with Planned Infrastructure

If construction on the proposed action, Lower Northwest Interceptor, and Freeport Intake (which are along the same alignment) would be concurrent, the City will coordinate with the other projects to allow access for construction of all three projects.

4.13.5 Cumulative Public Services and Utilities Impacts

Other projects that may be constructed concurrently along portions of the same alignment or in the project vicinity include the LNWI, Freeport Intake, and RT light rail projects. These projects could have similar impacts on utilities and emergency services as those described for the proposed action. Combined, the three projects could contribute to cumulative impacts even if individual project impacts would be less than significant. The proposed action could add to cumulative utility and emergency service impacts, including interruption of or damage to utility services (e.g., water lines and irrigation ditches, gas lines, electrical power and telephone lines, and wastewater conveyance systems) and hindrance of emergency service vehicles and personnel. With the project specific mitigation described above, it is unlikely that the proposed action would result in a considerable contribution to any cumulative utility impacts.

4.13.6 Findings

Impact	Significance Level	Significance Level after Mitigation
Impact UT-1: Interference with Existing Utility Infrastructure A	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: None*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*
Impact UT-2: Interference with Law Enforcement, Fire Protection, and Emergency Medical Services during Construction	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: None*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*
Impact UT-3: Generation of Solid Waste	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*
Impact UT-4: Interfere with Planned Infrastructure	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: None*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*

Notes: S = significant.
LTS = less than significant.
SU = significant and unavoidable.

4.14 Aesthetics

See the "3.8, Visual/Aesthetics" environmental setting sections in Chapter 3 for a discussion of existing conditions and relevant plans and policies.

4.14.1 CEQA Impacts

Refer to the associated "Approach and Methodology" subsections in Chapter 3 for a description of the methods used to evaluate impacts.

4.14.2 Standards of Significance

The proposed action would have a significant impact if it would:

- Have a substantial adverse effect on a scenic vista
- Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings along a scenic highway
- Substantially degrade the existing visual character or quality of the site and its surroundings

Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area

4.14.3 Aesthetics Impacts

Build Alternative A: Franklin to Freeport North Alignment

Impact VIS-1: Temporary Visual Changes from Construction

Construction of this alternative would create temporary changes in views of and from the project area. Construction activities would introduce considerable heavy equipment and associated vehicles, including dozers, graders, scrapers, and trucks, into the viewshed of Landscape Units 1, 2, 4, and 5. Viewer groups in the project area and vicinity would not be accustomed to seeing construction activities and equipment; their sensitivity to such impacts would be moderate overall. No temporary construction easements or permanent right-of-way takes for this alternative would be required from residential parcels. Possible nighttime construction at the interchange location could present a temporary source of new light and glare to area residents if development has occurred close to the project area. Residences in the Delta Shores project may be constructed by the time this project is ready for construction and could potentially be affected. The boundary of the Delta Shores project is between 0.1 mile (trending northeast) and 0.2 mile (due north) from the east edge of the I-5 interchange, and no dwellings would be constructed closer to the interchange. This impact would be considered significant. Mitigation Measure VIS-1 would reduce the impact to a less-than-significant level.

Impact VIS-2: Permanent Changes in Light and Glare

New sources of light and glare would be introduced with construction and operation of the proposed action. There would be an additional lighting source in all areas of the proposed action because no lights are currently in place. Nighttime lights from streetlights along the new

roadway, intersections, and interchange would be visible from all landscape units. The permanent impact of a new light source and glare from project components would be significant. Mitigation Measures VIS-1 and VIS-2 would reduce the magnitude of this impact, but not to a less-than-significant level; therefore, the impact would be considered significant and unavoidable.

Impact VIS-3: Permanent Changes to Views in Landscape Unit 1 (Freeport)

Existing conditions of views in Landscape Unit 1 are described above and shown in Figure 3.8-1, Photos 1 and 2, in Chapter 3. Permanent changes in views would be minimal from this landscape unit. Visual changes would include the construction of the proposed I-5 interchange where the existing Stonecrest Avenue overcrossing is located, as well as views of traffic traversing the new interchange after completion. Because the Stonecrest Avenue overcrossing is rarely used, additional traffic would change the view. As stated, residential viewers typically have extended viewing periods and are concerned about changes in the views from their homes. Therefore, they generally are considered to have high visual sensitivity. However, current views from this area are of I-5, a busy north-south thoroughfare through the area, and the Stonecrest Avenue overcrossing. The new interchange would be in the same location as the current overcrossing, at approximately the same height. Views from Freeport also currently include traffic on I-5. The new interchange would create additional views of traffic, but would not introduce an entirely new element into the view. This impact would be considered less than significant. No mitigation is required.

Impact VIS-4: Permanent Changes to Views in Landscape Unit 2 (Interstate 5)

Existing conditions of views in Landscape Unit 2 are described above and shown in Figure 3.8-2, Photo 3, in Chapter 3. Permanent changes in views would be the replacement of the Stonecrest Avenue overcrossing with the proposed I-5 interchange, at the same location and approximately the same height. Because the proposed roadway extension through the open space lands runs east-west, and I-5 runs north-south, views of the completed roadway would be minimal from I-5. During commute hours, when speeds are reduced, views would be less fleeting and viewers would be able to see part of the roadway extension in the middleground and possibly the background. Commuters and nonrecreational travelers have generally intermittent views and tend to focus on commute traffic and not on surrounding scenery. Therefore, they are generally considered to have low visual sensitivity. This impact would be considered less than significant. No mitigation is required.

Impact VIS-5: Permanent Changes to Views in Landscape Unit 3 (Stonecrest Avenue Overcrossing)

Existing conditions of views in Landscape Unit 3 are described above and shown in Figure 3.8-2, Photo 4, and Figure 3.8-3, Photo 5, in Chapter 3. Permanent changes in views would be the extension of the Stonecrest Avenue overcrossing road east to Franklin Boulevard through the open space lands. Viewers in this landscape unit would be vehicular users of the roadway extension. Because of the existing roadway character of this unit, viewers are accustomed to vehicles and a road in front of them. Views on either side of the roadway would be of natural open space and fallow agricultural lands. These views would be generally pleasant for travelers along the roadway extension. This impact would be considered less than significant. No mitigation is required.

Impact VIS-6: Permanent Changes to Views in Landscape Unit 4 (Meadowview Community)

Existing conditions in Landscape Unit 4 are described above and shown in Figure 3.8-3, Photo 6, in Chapter 3. Permanent changes to views in this landscape unit would include the extension of Cosumnes River Boulevard from Franklin Boulevard west through the open space lands that exist south of the residences in Landscape Unit 4. Depending on their distance from the alignment, some residences would have a view of the roadway extension to the south of the open space lands that would continue to exist between the residences and the roadway. Other residences would be located at such a distance from the project area that views of the road would be in the background, with extensive open space lands between the viewers and the road. For viewers in residences close to the eastern part of the alignment, the view would be changed considerably. In addition to the general visual impact of the roadway extension, a new overcrossing would be built crossing Morrison Creek and the UPRR line, creating a new vertical element into the viewshed for residents in this landscape unit. The overcrossing will be elevated over 30 feet above the adjacent grade and will include an additional 8-14 feet of vertical visual obstruction from the soundwall discussed in the Noise discussion in section 3.15. Relatively few viewers are likely to be affected. Mitigation Measures VIS-3, VIS-4, and VIS-5 would reduce the magnitude of this impact, but not to a less-than-significant level. Although the light rail aerial structure being proposed by Sacramento RT may be constructed prior to the proposed project, changing the current viewshed, the proposed project will still add, incrementally, to the significant visual impact. The impact would be considered significant and unavoidable.

Impact VIS-7: Permanent Changes to Views in Landscape Unit 5 (Franklin Boulevard/Cosumnes River Boulevard Intersection)

Existing conditions in Landscape Unit 5 are described above and shown in Figure 3.8-4, Photos 7 and 8, in Chapter 3. Permanent changes to views in this landscape unit would include the extension of Cosumnes River Boulevard from Franklin Boulevard west through the open space lands. The existing visual character of this intersection is generally urban, and the project will not change the urban character of the area. This impact would be considered less than significant. No mitigation is required.

Impact VIS-8: Consistency with Local Visual Policies

Local visual policies, described above, generally call for protecting open space and habitats and minimizing the effect of new construction on existing neighborhoods. Vegetation removal would occur only as necessary for construction of the proposed project and is limited to primarily ruderal groundcover vegetation. Vegetation and habitat surrounding the project alignment would be maintained to the extent feasible. Aside from removal of vegetation within the boundaries of the project alignment, the remaining open space lands will not be encroached upon by the proposed project. The undeveloped open space areas around Morrison Creek will be preserved to the greatest extent feasible. As described previously, new sources of light and glare would be introduced with construction and operation of the proposed project but their impact can be reduced with implementation of Mitigation Measures VIS-2 and VIS-3. The proposed project is generally consistent with local policies and guidelines. The impact would be considered less than significant. No additional mitigation is required.

Build Alternative B: Franklin to Freeport South Alignment

The impacts under this alternative would be the same as those described for Build Alternative A.

No Build Alternative (No Project)

The No Build Alternative would not alter the views from any of the landscape units in the area. Existing conditions would remain the same and there would be no impact under CEQA.

4.14.4 Aesthetics Avoidance, Minimization and Mitigation Measures

Mitigation Measure VIS-1: Prepare and Implement a Lighting Plan

The City will require the contractor to prepare a lighting plan that demonstrates that project lighting and vehicle lights from vehicles traveling on the roadway will not increase ambient nighttime lighting conditions for surrounding residential properties by more than 0.5-foot candles, the recommended level of illumination for a walkway along a residential roadside. Designs for shields and directional lighting will be included in this plan. Shields and directional lighting will be used to minimize the distance at which light emanating from the proposed action is visible and to mitigate the effects of glare. In particular, the residential areas will be shielded from lighting effects to the extent feasible. The following points provide additional detail on luminaries to be incorporated into the lighting plan.

1. Luminaires should be cut-off-type fixtures that cast low-angle illumination to minimize incidental spillover of light onto adjacent properties and open space. Fixtures that project upward and horizontally should not be used.
2. Luminaires should be shaded and directed away from the residential and open space areas adjacent to the project site.
3. Luminaire lamps should provide good color rendering, natural light qualities, and used only where necessary for safety and security purposes.
4. Luminaire mountings should be downcast and the height of placement minimized to reduce potential for backscatter into the nighttime sky and incidental spillover into adjacent properties and open space. Luminaire mountings should have nonglare finishes.

Mitigation Measure VIS-2: Use Low-Sheen and Nonreflective Surface Materials on Walls, Railing, and Light Standards

The City will require the contractor to design any retaining walls, railings, and light standards with low-sheen, nonreflective surface materials to reduce potential for glare.

Mitigation Measure VIS-3: Incorporate Design Characteristics to Minimize Visual Obtrusion

The City will require the contractor to consider and include design characteristics to minimize the visual mass and presence of constructed elements to the extent possible. Specifically, structural and vertical elements such as bridges, railings, abutments, piers, supports, and similar features will have a minimum profile to reduce visual intrusion and obstruction. Supports, piers, and railings will have an "open" structure wherever possible to facilitate views beyond (i.e., "transparency"). Vertical elements will be designed at even intervals and spacing to create aesthetic rhythm. Finished surfaces on all vertical features should have color and sheen that minimize contrast with the daytime sky.

Mitigation Measure VIS-4: Incorporate Aesthetic Treatments within the Roadway Corridor

The City will require the contractor to design the proposed action to provide aesthetic consideration to roadway features, including signage, safety devices, lighting, landscaping, shoulders, and other roadway hardware to the greatest extent possible. Plantings, materials, and finishes will be consistent with and complementary to the project context.

Mitigation Measure VIS-5: Provide Aesthetic Treatments to the Noise Barrier

The City will require the contractor to provide aesthetic treatments to the noise barrier, including landscaping and low-sheen and non-reflective surface materials. The finish should be matted and roughened, and the use of smooth troweled surfaces and glossy paint should be avoided.

4.14.5 Cumulative Aesthetics Impacts

Impact VIS-9: Cumulative Change in Viewshed

Within the project region, several projects are in the process of application to the City or are in the environmental review process. The proposed action in this document would contribute to the cumulative impact on viewsheds that is identified in the City of Sacramento General Plan Update EIR. The aesthetics impact identified by the EIR is stated below.

> Urbanization of 22,000 acres of currently vacant and agricultural land resulting in a change of many viewsheds. Intensification of the character of Sacramento as a major urban area.

The Sacramento General Plan Update EIR identifies this cumulative impact as significant and unavoidable with no mitigation available.

4.14.6 Findings

Impact	Significance Level	Significance Level after Mitigation
Impact VIS-1: Temporary Visual Changes from Construction	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*
Impact VIS-2: Permanent Changes in Light and Glare	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: None*	*Build Alternative A: SU* *Build Alternative B: SU* *No Build Alternative: None*
Impact VIS-3: Permanent Changes to Views in Landscape Unit 1 (Freeport)	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*
Impact VIS-4: Permanent Changes to Views in Landscape Unit 2 (Interstate 5)	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*
Impact VIS-5: Permanent Changes to Views in Landscape Unit 3 (Stonecrest Avenue Overcrossing)	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*
Impact VIS-6: Permanent Changes to Views in Landscape Unit 4 (Meadowview Community)	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: None*	*Build Alternative A: SU* *Build Alternative B: SU* *No Build Alternative: None*
Impact VIS-7: Permanent Changes to Views in Landscape Unit 5 (Franklin Boulevard/Cosumnes River Boulevard Intersection	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*

Impact	Significance Level	Significance Level after Mitigation
Impact VIS-8: Consistency with Local Visual Policies	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*
Impact VIS-9: Cumulative Change in Viewshed	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: None*	*Build Alternative A: SU* *Build Alternative B: SU* *No Build Alternative: None*

Notes: S = significant.
LTS = less than significant.
SU = significant and unavoidable.

4.15 Cultural Resources

See the "Cultural Resources" environmental setting section in Chapter 3 for a discussion of existing conditions and relevant plans and policies. Following is a discussion of state regulations.

State Regulations

California Environmental Quality Act

CEQA requires public or private projects financed or approved by public agencies to assess the effects of the project on cultural resources that might qualify as being "historical," as that term is defined by statute (Public Resources Code [PRC] 21084.1.) Potentially historical resources could include buildings, sites, structures, or objects that may have historical, architectural, cultural, or scientific importance. The State CEQA Guidelines (14 California Code of Regulations [CCR] 15064.5) define three ways that a property can qualify as a significant historical resource for the purposes of CEQA review.

- If the resource is listed in or determined eligible for listing in the California Register of Historical Resources (CRHR).
- If the resource is included in a local register of historical resources, as defined in PRC 5020.1(k) or identified as significant in an historical resource survey meeting the requirements of PRC 5024.1(g) unless the preponderance of evidence demonstrates that it is not historically or culturally significant.
- The lead agency determines the resource to be historically significant or significant in the architectural, educational, social, political, military, or cultural annals of California, as supported by substantial evidence in light of the whole record.

4.15.1 CEQA Impacts

Refer to the associated "Approach and Methodology" subsections in Chapter 3 for a description of the methods used to evaluate impacts.

4.15.2 Standards of Significance

According to the State CEQA Guidelines, a project with an effect that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant impact on the environment (14 CCR 15064.5[b]). The State CEQA Guidelines further state that a substantial adverse change in the significance of an historical resource means the physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired. Actions that would materially impair the significance of an historic resource are those that would demolish or adversely alter those physical characteristics that convey its historical significance and qualify it for inclusion in the CRHR or in a local register or survey that meet the requirements of PRC 5020.1(k) and 5024.1(g). The proposed action would have a significant impact if it would:

- Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5

- Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5
- Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature
- Disturb any human remains, including those interred outside of formal cemeteries

4.15.3 Cultural Resources Impacts

Build Alternative A: Franklin to Freeport North Alignment

Impact CR-1: Direct Damage to or Destruction of Baked Clay Scatter 1 during Construction of the Roadway

Based on the results of test excavations, it appears that Baked Clay Scatter 1 has been redistributed within the plow zone. It is unclear whether agricultural disturbance of the soils has destroyed the site or moved it elsewhere within or outside the project area. The lack of archaeological materials at Baked Clay Scatter 1's recorded location clearly indicates that it is not eligible for listing in the NRHP, nor does it meet the definition of historical resource or unique archaeological resource under CEQA. Therefore, construction of the roadway would not affect Baked Clay Scatter 1. There would be no impact.

Impact CR-2: Inadvertent Direct Damage to or Destruction of Buried Archaeological Resources and Human Remains during Construction of the Roadway

The potential for buried archaeological materials and human remains to be present in the project area has been adequately explored, with negative results. Nevertheless, because only a relatively small portion of the project area has been subjected to subsurface testing, construction and staging activities associated with the proposed action have some potential to disturb buried, undiscovered archaeological sites and human remains. Damage to or destruction of significant or potentially significant buried archaeological remains or human remains during construction would be considered significant. Mitigation Measures CR-1 and CR-2 would reduce this impact to a less-than-significant level.

Build Alternative B: Franklin to Freeport South Alignment

The impacts under this alternative would be the same as those described for Build Alternative A.

No Build Alternative (No Project)

The proposed action would not be constructed under this alternative. Therefore, there is no potential for this alternative to affect cultural resources. No impact would occur.

4.15.4 Cultural Resources Avoidance, Minimization and Mitigation Measures

Mitigation Measure CR-1: Stop Work If Archaeological Materials Are Discovered during Construction

If archaeological materials (e.g., chipped or ground stone, historic debris, building foundations, or nonhuman bone) are inadvertently discovered during ground-disturbing activities, the construction contractor will stop work in that area and within 30.5 m (100 ft) of the find until a qualified archaeologist can assess the significance of the find and develop appropriate treatment

measures. Treatment measures shall be made in consultation with the City, Caltrans, FHWA, SHPO, and other consulting parties to the Section 106 review process. Treatment measures typically include development of avoidance strategies or mitigation of impacts through data recovery programs such as excavation or detailed documentation. If cultural resources are discovered during construction activities, the construction contractor and lead contractor compliance inspector will verify that work is halted until appropriate treatment measures are implemented.

Mitigation Measure CR-2: Stop Work If Human Remains Are Discovered during Construction

If human remains of Native American origin are discovered during ground-disturbing activities, it is necessary for the City and FHWA to comply with state laws relating to the disposition of Native American burials, which fall within the jurisdiction of the NAHC (PRC 5097). If human remains are discovered or recognized in any location other than a dedicated cemetery, the City and FHWA will not allow further excavation or disturbance within 100 m (328.1 ft) of the find or any nearby area reasonably suspected to overlie adjacent human remains until both of the following occur.

1. The County Coroner has been informed and has determined that no investigation of the cause of death is required.
2. If the remains are of Native American origin:
   a. The descendants from the deceased Native Americans have made a recommendation to the landowner or the person responsible for the excavation work for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in PRC 5097.98, or
   b. NAHC was unable to identify a descendant or the descendant failed to make a recommendation within 24 hours after being notified by the NAHC.

4.15.5 Cumulative Cultural Resources Impacts

Although the other projects that could occur in the project area and vicinity could have similar impacts to the proposed project (i.e., the roadway project), cultural resources investigations have not revealed the presence of intact resources in the area. With implementation of Mitigation Measures CR-1 and CR-2, the proposed action would not contribute to cumulative impacts.

4.15.6 Findings

Impact	Significance Level	Significance Level after Mitigation
Impact CR-1: Direct Damage to or Destruction of Baked Clay Scatter 1 during Construction of the Roadway	*Build Alternative A: None* *Build Alternative B: None* *No Build Alternative: None*	*Build Alternative A: None* *Build Alternative B: None* *No Build Alternative: None*
Impact CR-2: Inadvertent Direct Damage to or Destruction of Buried Archaeological Resources and Human Remains during Construction of the Roadway	*Build Alternative A: S* *Build Alternative B: S* *No Build Alternative: None*	*Build Alternative A: LTS* *Build Alternative B: LTS* *No Build Alternative: None*

Notes: S = significant.
LTS = less than significant.
SU = significant and unavoidable.

4.16 Other CEQA Considerations

As required by CEQA, this chapter discusses the following subjects with respect to the proposed project:

- growth-inducing impacts;
- cumulative impacts,
- significant and unavoidable impacts; and
- significant and irreversible environmental changes.

4.16.1 Growth-Inducing Impacts

Growth can be induced in several ways, including by eliminating obstacles to growth or stimulating economic activity within a region. Based on the standards of significance contained in State CEQA Guidelines Appendix G, a project is considered to be directly or indirectly growth-inducing if it:

- fosters economic or population growth, or additional housing; or
- removes obstacles to growth (e.g., through development of physical infrastructure, roadways, and utilities).

As described previously in this chapter, the proposed project would have the following impacts related to growth:

Build Alternative A: Franklin to Freeport North Alignment

Impact G-1: Induce Growth in Sacramento, Freeport, or Unincorporated Sacramento County

This alternative would improve circulation between SR 99 and I-5, improve access to I-5 from Freeport, and improve accessibility to developable land in southern Sacramento and the City's sphere of influence. By substantially improving access to the freeway system, this alternative would accommodate planned growth in the industrially zoned area adjacent to I-5 and in residentially zoned area in the center of the project area. This alternative does not provide capacity beyond that needed to accommodate planned growth consistent with the City and County General Plans. Therefore, it would not induce unplanned growth.

Future growth in the project area between Franklin Boulevard and Freeport Boulevard that would be indirectly induced or accommodated by this alternative would be subject to growth controls maintained by the City. Zoning changes, tentative subdivision maps, and other zoning approvals, which would involve environmental documentation, public notification and involvement, mitigation, and approval by local agencies, would be required to accommodate such growth. This growth inducement would be an indirect, permanent effect. However, because the project area has long been identified for future urbanization, the City has planned for accommodating the resulting public services, utilities, and infrastructure needs.

Build Alternative B: Franklin to Freeport South Alignment

Impact G-1: Induce Growth in Sacramento, Freeport, or Unincorporated Sacramento County

This impact under this alternative would be the same as that discussed above for Build Alternative A.

No-Build Alternative (No Project)

This alternative would not result in growth-inducement effects. The southwest area of Sacramento has been identified as a potential growth area by the City for more than 20 years, but development has not yet occurred. Planned growth likely would occur eventually if this alternative is selected, but without the impetus of direct freeway access.

4.16.2 Cumulative Impacts

Cumulative impacts are impacts associated with two or more individual projects that when considered together compound to increase the environmental impacts. Cumulative impacts can result from individually minor but collectively significant projects taking place over an extended period (State CEQA Guidelines Section 15355).

State CEQA Guidelines Section 15130 describes the requirements for the discussion of cumulative impacts in an EIR. It states that an EIR will discuss cumulative impacts of a project when the project's incremental effect is cumulatively considerable. The discussion will reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as much detail as is provided for the impacts attributable to the project alone.

Previously approved land use documents, such as general plans, may be used in cumulative impact analysis. No further cumulative impact analysis is required when a project is consistent with a general, specific, or comparable programmatic plan where the lead agency determines that the regional or areawide cumulative impacts of the proposed project have already been adequately addressed, as defined in Section 15152(e), in a certified EIR for that plan. If a cumulative impact was adequately addressed in a prior EIR for a general plan and the project is consistent with that plan, then an EIR for such a project should not further analyze that cumulative impact.

The potential cumulative impacts of the proposed project alternatives are discussed in detail for each resource topic addressed in this chapter, and mitigation has been identified when available to reduce the cumulative impacts. In summary, as discussed previously in this chapter, the project would not have significant cumulative impacts related to population and housing, geology, hydrology, water quality, hazards and hazardous materials, noise, public services and utilities, and cultural resources. The project would have cumulative effects related to agriculture, air quality, transportation/circulation, biological resources, and aesthetics.

4.16.3 Significant and Unavoidable Impacts

A significant and unavoidable impact is one that would cause a substantial adverse effect on the environment and for which no mitigation is available to reduce the impact to a less-than-significant level. The significant and unavoidable impacts of the proposed project alternatives were discussed in detail for the resource topic addressed in this chapter. In summary, as

discussed previously in this chapter, Alternative A would have significant and unavoidable impacts on agriculture, air quality, noise, transportation/circulation, aesthetics, and biology (impacts on biology would be less-than-significant individually, but cumulatively significant and unavoidable). Alternative B would have significant and unavoidable impacts on agriculture, land use, air quality, noise, transportation/circulation, aesthetics, and biology (impacts on biology would be less-than-significant individually, but cumulatively significant and unavoidable). The No Build Alternative would have significant and unavoidable impacts on transportation/circulation.

4.16.4 Significant and Irreversible Environmental Changes

Section 15126(f) of the State CEQA Guidelines provides the following direction for the discussion of irreversible changes:

> Uses of nonrenewable resources during the initial and continued phases of the project may be irreversible since a large commitment of such resources makes removal or nonuse thereafter unlikely. Primary impacts and, particularly, secondary impacts (such as highway improvements which provides access to a previously inaccessible area, generally commit future generations to similar uses. Also, irreversible damage can result from environmental accidents associated with the project. Irretrievable commitments of resources should be evaluated to ensure that current consumption is justified.

The proposed project would result in an irreversible commitment of energy resources, primarily in the form of fossil fuels (e.g., fuel, oil, natural gas, and gasoline) for construction equipment, as well as consumption or destruction of other nonrenewable and slowly renewable resources (e.g., gravel, metals, and water). The proposed project would also result in the permanent conversion of agricultural lands to developed land uses (i.e., roadway facilities). This conversion would represent an irreversible commitment of land to another land use.

Chapter 5 Cumulative Impacts

5.1 Requirements for Cumulative Impact Analysis

5.1.1 Cumulative Analysis under NEPA

Under NEPA, a cumulative impact is the impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or nonfederal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. (40 CFR § 1508.7)

A cumulative impact includes the total effect on a natural resource, ecosystem, or human community due to past, present, and future activities or actions of Federal, non-Federal, public, and private entities. Cumulative impacts may also include the effects of natural processes and events, depending on the specific resource in question. Cumulative impacts include the total of all impacts to a particular resource that have occurred, are occurring, and will likely occur as a result of any action or influence, including the direct and reasonably foreseeable indirect impacts of a Federal activity. Accordingly, there may be different cumulative impacts on different environmental resources.

5.1.2 Cumulative Analysis under CEQA

Under CEQA, cumulative impacts are defined as two or more individual effects that, when considered together, are considerable or that compound or increase other environmental impacts. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time. (CEQA Guidelines Section 15355)

A project's contribution to a cumulative impact may be considered less than significant if it is implementing a plan or program designed to avoid the cumulative impact (CEQA Guidelines Section 15064[h]) or if it will implement or fund its fair share of a mitigation measure designed to alleviate the cumulative impact (CEQA Guidelines Section 15130[a]).

The cumulative impact analysis may be less detailed than the analysis of the project's individual effects. The cumulative impact analysis must identify related projects through a "list" or a "projection" approach, summarize effects of the related projects, and contain a reasonable analysis of cumulative impacts and mitigation measures (State CEQA Guidelines Section 15130[b]).

5.2 Approach to Cumulative Impact Analysis

The cumulative analysis for the proposed action takes into consideration the other projects ongoing in the same geographic area as the proposed action, as well as planned land uses and transportation and circulation projections identified in the City's general plan and policy documents. The area north of the SRCSD Bufferlands, which includes the project area, has long been proposed for development. The proposed action has been identified in the City of Sacramento General Plan and Airport-Meadowview Community Plan and would contribute incrementally to the cumulative land use impacts identified in the City of Sacramento General Plan Update EIR (City of Sacramento 1987).

Other projects that may be constructed concurrently along portions of the same alignment or in the project vicinity could have similar impacts to those described for the proposed action. Combined, these projects could contribute to cumulative impacts even if individual project impacts would be less than significant. The following projects are also located in the I-5/Cosumnes River Boulevard project area and were considered in the evaluation of cumulative effects.

5.2.1 Delta Shores Property

Approximately 283.3 to 323.7 hectares (ha) (700 to 800 acres [ac]) of vacant agricultural land is located on both sides of I-5. The City approved a mixed-use development called the Delta Shores Project for this land in the 1980s, but the land has not been developed. There is no current specific development proposal for the land at this time although tentative development scenarios have been discussed with the City.

5.2.2 Stone Family Trust Property

Approximately 32.4 ha (80 ac) of vacant agricultural land are located east of I-5 and east of the Delta Shores property. There is no specific development proposal for the land at this time although tentative development scenarios have been discussed with the City.

5.2.3 Sacramento Regional Transit District South Line Extension

The Sacramento Regional Transit District (RT) is proposing a 17.7-km (11-mi) extension of its light rail system from downtown Sacramento to Elk Grove in two phases. The first phase has been constructed. The second phase, a segment of which is located within the I-5/Cosumnes River Boulevard project area, would extend light rail from Meadowview Road to the vicinity of Calvine/Auberry Roads. The project includes a new Morrison Creek Station planned between the existing Meadowview Station and the planned Franklin Road Station. Environmental review and preliminary engineering for the second phase is ongoing and anticipated to be completed in 2005/2006. Additional information on this project can be obtained at www.slp2.org. *State Clearinghouse Number: 2002032088*

5.2.4 Sacramento Regional County Sanitation District Lower Northwest Interceptor Project

The Sacramento Regional County Sanitation District (SRCSD) is constructing a 27.4-km-long (17-mi-long) wastewater interceptor between the Natomas area in north Sacramento and the Sacramento Regional Wastewater Treatment Plant (SRWTP) just south of the I-5/Cosumnes River Boulevard project area. The interceptor alignment runs through West Sacramento and includes two Sacramento River crossings. SRCSD certified an environmental impact report (EIR) in 2003 (Sacramento County 2003). Construction of the project began in 2004 and is anticipated to be complete in 2006. When it approved the interceptor project, SRCSD decided to construct the interceptor along the proposed north alignment of the Cosumnes Boulevard extension. Additional information on this project can be obtained at www.srcsd.com. *State Clearinghouse Number: 2001112085.*

5.2.5 Freeport Regional Water Project

The Freeport Regional Water Project is a joint water project being developed by Sacramento County and East Bay Municipal Utilities District, in close coordination with the City of Sacramento and the U.S. Bureau of Reclamation. The goal of the Freeport Regional Water Project is to address the drinking water needs of the Sacramento County Water Agency and the East Bay Municipal Utilities District. The proposed project would construct and operate a water supply project to meet regional water needs. Major facilities include a new water intake structure on the Sacramento River near Freeport, a raw water pipeline in Sacramento and San Joaquin Counties, a new water treatment plant in central Sacramento County, a new pumping plant near the existing terminus of Folsom South Canal, and a new pumping and treatment facility at the Mokelumne Aqueduct in San Joaquin County. The final EIR for the project was certified by the Freeport Regional Water Authority in April 2004. The final EIS for the project was released in April 2004, and in January 2005 the U.S. Bureau of Reclamation issued the Record of Decision. The Freeport Regional Water Authority and the U.S. Bureau of Reclamation chose Alternative 5 as the preferred pipeline alignment. The preferred alternative follows the proposed north alignment of the I-5/Cosumnes River Boulevard roadway extension. The project schedule anticipates engineering and permitting work to be completed by spring 2006; construction on the project is anticipated to be complete by 2010. Additional information on this project can be found at www.freeportproject.org. *State Clearinghouse Number: 2002032132.*

5.2.6 South Sacramento Streams Project

The Sacramento Area Flood Control Agency (SAFCA), State Reclamation Board, and the U.S. Army Corps of Engineers (Corps) have jointly proposed to construct flood improvements on select stream reaches within the Morrison Creek stream group, located in south Sacramento County. The specific streams included in the project are Morrison Creek, Florin Creek, Elder Creek, and Unionhouse Creek. The objective of the flood protection improvements is to implement the design modifications needed to achieve minimum Federal Emergency Management Agency (FEMA) certifiable 100-year level of flood protection as identified by the joint study of flood protection needs. Flood protection would be accomplished by excavating the selected stream channels, retrofitting stream passage beneath several local bridge crossings, installing floodwalls at select locations, realigning portions of existing levees, and installing box culverts at several stream crossings. This project has been approved by SAFCA and the Corps.

The project includes constructing additional levees and/or raising existing levees on the northern boundary of the SRWTP. Construction is anticipated to commence in approximately 2005. Additional information on this project can be found at www.safca.org. (Kreinberg pers. comm.) *State Clearinghouse Number: 1997102056*

5.2.7 Sacramento Regional County Sanitation District Bufferlands Habitat Enhancement Project

The SRCSD Bufferlands staff has been working with SAFCA to develop a combined flood control, recreation, and habitat enhancement and restoration project as part of the South Sacramento Streams Project. The enhancement project would enhance and restore habitat on approximately 161.9 ha (400 ac) of the SRCSD Bufferlands, including a small area (less than 0.4 ha [1 ac]) of annual grassland within the I-5/Cosumnes River Boulevard project area. Habitat enhancement in this area would consist of plantings with herbaceous vegetation and native grasses suitable for upland habitat. (Young pers. comm.)

5.3 Assessment of Cumulative Impacts

Cumulative impacts are identified in Chapters 3 and 4 for each of the resource topics analyzed in this EIS/EIR. Cumulative impacts have been identified in the following areas and mitigation has been identified when available to reduce the cumulative impacts.

5.3.1 Farmlands and Agriculture

Conversion of farmlands that would occur on implementation of the proposed action would add incrementally to the cumulative effect of loss of farmland, in combination with development projects that would result in planned buildout of the general plan. These farmlands have been designated for urban development in both the City and County general plans. There would be slight differences in the amount of farmland converted under each of the Build Alternatives.

5.3.2 Hydrology and Water Quality

Surface waters in the project area are identified as impaired for a variety of constituents characteristic of undeveloped land and agricultural areas, including fertilizers, herbicides, and pesticides. Although these waters thus have no additional assimilative capacity for such constituents, none of these constituents would be generated during construction or operation of the proposed action and therefore the project does not contribute to such cumulative effects. However, surface waters in the project area may also be contaminated by urban runoff, including sediment, hydrocarbons and metals from road surfaces, pesticides, nutrients, bacteria, and trash and these types of impacts might occur from construction of other projects in the area. The proposed action would implement mitigation measures such that impacts on water quality from urban runoff are avoided or minimized. However, project would contribute to a cumulative increase in impervious surface when combination with planned development projects in the area that would also result in increases in impervious surfaces. Therefore, the proposed action in combination with these other projects could contribute to a cumulative regional increase in runoff volumes and flooding. Impacts under both Build Alternatives would be similar.

5.3.3 Aesthetics

The proposed action would contribute to cumulative aesthetics impacts identified in the City of Sacramento General Plan Update EIR. The aesthetics impact identified by the EIR is identified as "Urbanization of 22,000 acres of currently vacant and agricultural land resulting in a change of many viewsheds. Intensification of the character of Sacramento as a major urban area" versus remaining an area of open space and agricultural fields. Construction of the proposed action, in combination with other projects with visible facilities, such as the light-rail extension or new development, could result in cumulative aesthetic impacts. This impact is described in Chapter 3 under "Impact VIS-9: Cumulative Change in Viewshed." Impacts under both Build Alternatives would be similar.

5.3.4 Air Quality

Operation of the proposed project would not generate CO levels in excess of the ambient air quality standards. However, construction activities for the project, as well as all the other projects contemplated in the project area and vicinty, have the potential to generate NO_X and PM10 and contribute to temporary cumulative increases in these pollutants. Impacts under both Build Alternatives would be similar. The City has committed to implement measures to reduce the severity of the cumulative effect (described in detail at the end of Chapter 3 under "Air Quality Environmental Commitments").

5.3.5 Wetlands and Other Waters

Implementation of the proposed action, in combination with other local and regional projects, would contribute to the cumulative loss of seasonal emergent wetland, freshwater marsh, and drainageways in the project vicinity. The cumulative effects would result both from placement of support structures for the light-rail extension and the proposed project, as well as temporary effects from construction through the resources. Impacts under both Build Alternatives would be similar. This impact is described in Chapter 3 under "Impact WTL-4: Cumulative Loss of Seasonal Emergent Wetland, Freshwater Marsh, Drainageways." Mitigation has been identified for this effect (WTL-1: Avoid or Minimize Indirect Impacts on Wetlands, and WTL-2: Compensate for Loss of Wetlands).

5.3.6 Vegetation

Implementation of the proposed action in combination with other local and regional projects could contribute to the cumulative loss of protected trees and the spread of noxious weeds in the project vicinity. Impacts under both Build Alternatives would be similar. This impact is described in Chapter 3 under "Impact VEG-3: Cumulative Loss of Protected Trees and the Spread of Noxious Weeds in the Project Vicinity." Mitigation has been identified for this effect (VEG-1: Prevent the Introduction or Spread of Noxious Weeds, and VEG-2: Protect Trees to be Avoided by Construction, and VEG-3: Compensate for Loss of Protected Trees).

5.3.7 Wildlife

Implementation of the proposed action, in combination with other local and regional projects, could contribute to the cumulative loss of nesting migratory birds in the project vicinity. Impacts

under both Build Alternatives would be similar. This impact is described in Chapter 3 under "Impact WLD-2: Cumulative Loss of Nesting Migratory Birds." Mitigation has been identified for this effect (WLD-1: Avoid Impacts on Nesting Migratory Birds, Including Raptors).

5.3.8 Threatened and Endangered Species

Implementation of the proposed action, in combination with other local and regional projects, could contribute to the cumulative loss of special-status vernal pool invertebrates, VELB, giant garter snake habitat, northwestern pond turtle, Swainson's hawk, and special-status bird nesting habitat in the project vicinity. Impacts under both Build Alternatives would be similar. This impact is described in Chapter 3 under "Impact TES 7: Cumulative Loss of Special-Status Vernal Pool Invertebrates, VELB, Giant Garter Snake Habitat, Northwestern Pond Turtle, Swainson's Hawk, and Special-Status Bird Nesting Habitat." Mitigation has been identified for this effect (TES-1: Environmental Education Program, TES-2: Avoid Indirect Impacts on Special-Status Wildlife Species, TES-3: Avoid and Compensate for Indirect Impacts on Listed Vernal Pool Invertebrates, TES-4: Avoid Impacts on Valley Elderberry Longhorn Beetles, TES-5: Compensate for Direct Impacts on Valley Elderberry Longhorn Beetles, TES-6: Avoid Impacts on Giant Garter Snake, TES-7: Compensate for Direct Impacts on Giant Garter Snakes, TES-8: Avoid Impacts on Northwestern Pond Turtle, TES-9: Avoid Impacts on Nesting Swainson's Hawks, TES-10: Compensate for Loss of Swainson's Hawk Foraging Habitat, and TES-11: Avoid Impacts on Nesting Special-Status Birds).

5.3.9 Transportation and Circulation

Cumulative (Year 2025) conditions for the study area roadway system are summarized in Chapter 3 in Tables 3.7-14 through 3.7-20, which include traffic analysis results for study area roadway segments, intersections, freeway mainline segments, ramp junctions, and regional circulation performance. Impacts under both Build Alternatives would be the same.

In summary, under cumulative plus project conditions, the redistribution of study area traffic would have the following beneficial effects:

- Decrease daily traffic volume on Pocket Road between I-5 and Freeport Boulevard. This impact is described in Chapter 3 under "Impact TR-14: Improved Cumulative Operations on Pocket Road between I-5 and Freeport Boulevard."
- Decrease daily traffic volume on Meadowview Road between Freeport Boulevard and 24th Street. This impact is described in Chapter 3 under "Impact TR-15: Improved Cumulative Operations on Meadowview Road between Freeport Boulevard and 24th Street."
- Decrease daily traffic volume on Meadowview Road between 24th Street and Brookfield Drive. This impact is described in Chapter 3 under "Impact TR-16: Improved Cumulative Operations on Meadowview Road between 24th Street and Brookfield Drive."
- Decrease daily traffic volume on Mack Road between Brookfield Drive and Franklin Boulevard. This impact is described in Chapter 3 under "Impact TR-17: Improved Cumulative Operations on Mack Road between Brookfield Drive and Franklin Boulevard."

- Decrease daily traffic volume on Mack Road between Franklin Boulevard and Center Parkway. This impact is described in Chapter 3 under "Impact TR-18: Improved Cumulative Operations on Mack Road between Franklin Boulevard and Center Parkway."
- Decrease daily traffic volume on Franklin Boulevard between Mack Road and Cosumnes River Boulevard. This impact is described in Chapter 3 under "Impact TR-19: Improved Cumulative Operations on Franklin Boulevard between Mack Road and Cosumnes River Boulevard."
- Decrease daily traffic volume on Freeport Boulevard between Meadowview Road and Cosumnes River Boulevard. This impact is described in Chapter 3 under "Impact TR-23: Improved Cumulative Operations on Freeport Boulevard between Meadowview Road and Cosumnes River Boulevard."
- Reduce peak hour traffic volumes entering the Freeport Boulevard/Meadowview Road intersection by approximately 1,000 and 900 vehicles during the a.m. and p.m. peak hours, respectively. This impact is described in Chapter 3 under "Impact TR-24: Improved Cumulative Operations at the Freeport Boulevard/Meadowview Road Intersection."
- Reduce peak hour traffic volumes entering the 24th Street/Meadowview Road intersection by approximately 200 and 700 vehicles during the a.m. and p.m. peak hours, respectively. This impact is described in Chapter 3 under "Impact TR-26: Reduced Cumulative Peak Hour Traffic Volumes Entering the 24th Street/Meadowview Road Intersection."
- Reduce peak hour traffic volumes entering the Franklin Boulevard/Mack Road intersection. This impact is described in Chapter 3 under "Impact TR-27: Improved Cumulative Operations at the Franklin Boulevard/Mack Road Intersection."
- Provide an additional entrance/exit to the interstate. This impact is described in Chapter 3 under "Impact TR-32: Redistribution of Cumulative Traffic on the I-5 Mainline and at Many of the Freeway Ramp Junctions."

The project would increase daily traffic volumes at the following locations:

- Increase daily traffic volumes on Cosumnes River Boulevard between Franklin Boulevard and Center Parkway. This impact is described in Chapter 3 under "Impact TR-20: Increased Cumulative Daily Traffic Volumes on Cosumnes River Boulevard between Franklin Boulevard and Center Parkway."
- Increase daily traffic volumes on Cosumnes River Boulevard between Center Parkway and Bruceville Road. This impact is described in Chapter 3 under "Impact TR-21: Increased Cumulative Daily Traffic Volumes on Cosumnes River Boulevard between Center Parkway and Bruceville Road." Mitigation has been identified for this impact (Mitigation Measure TR-4: Widen Cosumnes River Boulevard between Center Parkway and Franklin Boulevard).
- Increase daily traffic volumes on Cosumnes River Boulevard between Bruceville Road and SR 99. This impact is described in Chapter 3 under "Impact TR-22: Increased Cumulative Daily Traffic Volumes on Cosumnes River Boulevard between Bruceville Road and SR 99."
- Increase peak hour traffic volumes on critical turn movements at the SR 160/Freeport Bridge intersection, which would increase the average control delay by more than 5.0 seconds. This

impact is described in Chapter 3 under "Impact TR-25: Increased Cumulative Peak Hour Traffic Volumes on Critical Turn Movements at the SR 160/Freeport Bridge Intersection." Mitigation has been identified for this effect (TR-5: Installation of a Future Traffic Signal at the SR 160/Freeport Bridge Intersection).

- Increase peak hour traffic volumes entering the Franklin Boulevard/Cosumnes River Boulevard intersection but reduce delay during the a.m. peak hour and provide LOS E operations during the p.m. peak hour, due to capacity improvements at this intersection. This impact is described in Chapter 3 under "Impact TR-28: Increased Cumulative Peak Hour Traffic Volumes Entering the Franklin Boulevard/Cosumnes River Boulevard Intersection."
- Increase peak hour traffic volumes on critical turn movements at the Center Parkway/Cosumnes River Boulevard intersection, which would increase the average control delay by more than 5.0 seconds. This impact is described in Chapter 3 under "Impact TR-29: Increased Cumulative Peak Hour Traffic Volumes Entering the Center Parkway/Cosumnes River Boulevard Intersection."
- Increase peak hour traffic volumes on critical turn movements at the southbound SR 99 Ramps/Cosumnes River Boulevard intersection. This impact is described in Chapter 3 under "Impact TR-30: Increased Cumulative Peak Hour Traffic Volumes on Critical Turn Movements at the Southbound SR 99 Ramps/Cosumnes River Boulevard Intersection."
- Result in LOS E operations at the Freeport Boulevard (SR 160)/Cosumnes River Boulevard in the p.m. peak hour. This impact is described in Chapter 3 under "Impact TR-31: Redistribution of Cumulative Study Area Traffic Resulting in LOS E during the p.m. peak hour at the Freeport Boulevard (SR 160)/Cosumnes River Boulevard Intersection."

5.3.10 Utilities and Emergency Services

The proposed action could add to cumulative utility and emergency service impacts, including an increased demand for services that would occur with planned development. However, because the project area has long been identified for future urbanization, the City has planned for accommodating the resulting public services, utilities, and infrastructure needs. With the project specific environmental commitments identified in Chapter 3 in the project design, it is unlikely that either Build Alternative would result in a considerable contribution to any cumulative utility or emergency service impacts.

5.3.11 Land Use, Community, and Growth

The proposed action has been identified in the City general plan and community plan and would contribute incrementally to the cumulative land use impacts identified in the general plan EIR. Neither Build Alternative would displace any residences, people, or businesses because the land is vacant. Therefore, the proposed action would not contribute to any cumulative displacement impacts that may occur as a result of the combination of other projects in the area. Effects related to construction employment would be minor and temporary. Although the loss of some portion of the local tax base would occur from acquisition of right-of-way for the project, the loss would not be substantial. None of the alternatives would create a barrier that would divide a cohesive community. Although the existing character of the Freeport community could be affected by planned urbanized development, any such development would be required to go through local

environmental review and approval processes, which would address any potential impacts. In general, the long-term effects of the project would occur along the length of the project corridor, with the majority of effects generally spread evenly across all populations residing near the project area or in the region. Therefore, the proposed action is not considered to potentially cause disproportionately high and adverse human health and environmental effects on minority or low-income residents.

5.3.12 Geology, Soils, Seismicity, and Paleontological Resources

Construction in the project area could lead to an increased sediment load to receiving waters, including the Sacramento River. However, soil erosion hazards are generally slight within the project corridor and in the surrounding area (Tugel 1993) where other proposed actions might be constructed in the future. This low erosion hazard, and conformance with the City's erosion and sediment control ordinance, would reduce the potential for cumulative sedimentation impacts from either Build Alternative.

5.3.13 Cultural Resources

Although the other projects that could occur in the project area and vicinity could have similar impacts as the proposed roadway project, cultural resources investigations have not revealed the presence of intact resources in the project area and therefore cultural resources are unlikely to be affected by the project.

5.4 Conclusion

As described in section 5.2 above, the cumulative analysis for the proposed action takes into consideration the other projects identified as ongoing in the same geographic area as the proposed action, as well as planned land uses and transportation and circulation projections identified in the City's general plan and policy documents.

Other projects that may be constructed in the project area, such as installation of buried water conveyance facilities, sewer pipelines, the light-rail extension, or levee improvements could have similar impacts to those described for the proposed action. Such cumulative impacts, although perhaps individually minor, could contribute incrementally to cumulative effects during their construction. For example, construction of the roadway in combination with the water conveyance facilities, sewer pipeline, and light-rail extension would have a temporary cumulative effect on the stream habitat provided by Morrison Creek. Construction of the underground water conveyance facilities, which follows the same alignment as the proposed action, would likely result in the loss of the planted elderberry shrubs on the Bufferlands, which provide habitat for the federally listed valley elderberry longhorn beetle. In addition, all the projects contemplated in the area would have temporary effects related to generation of dust, increased noise levels during construction, and increased potential for water quality effects from operation of construction equipment.

Permanent cumulative impacts may occur from construction of above ground facilities, such as the light-rail extension, which would include a permanent structure over Morrison Creek. This

project, in combination with the proposed action, could result in permanent cumulative impacts related to a change in the visual quality of the area, including new sources of light and glare, was well as increases in noise levels from the addition of new sources of train and automobile traffic.

Overall, the long-term cumulative benefits of the proposed action include improved traffic mobility within the southerly limits of Sacramento and provision of access to developable land adjacent to I-5. However, additional permanent cumulative impacts could occur with the planned development of Delta Shores or Stone Family Trust. Such impacts would include loss of farmland, increases in impervious surfaces, and increased traffic in the project vicinity.

Chapter 6 Summary of Public/Agency Involvement Process/Tribal Coordination

6.1 Public/Agency Involvement Process

Coordination and consultation with various federal, state, and local agencies; elected officials; community organizations; Native American tribes; and other individuals from the neighborhoods and communities within the project area and vicinity were conducted through a variety of means, including public agency coordination, consultation, and the public scoping process.

6.1.1 Notice of Intent/Notice of Preparation

NEPA specifically requires the federal lead agency to consult with federal agencies that have jurisdiction over the proposed action by law or special expertise. The lead agency must also solicit appropriate information from the public during EIS preparation. Scoping is the process by which the lead agency conducts these activities. This process helps determine the scope of the EIS, including the extent of the action, the range of the alternatives, and the types of significant adverse effects to be evaluated. The lead agency's scoping process may include early scoping meetings that can be incorporated with other aspects of the federal agency planning process. As part of the scoping process, NEPA and FHWA require that a notice of intent (NOI) to prepare an EIS be filed with EPA and appear in the Federal Register.

CEQA also specifically requires that when one or more state agencies will be a responsible or trustee agency, a notice of preparation (NOP) must be filed with the State Clearinghouse (CEQA Guidelines Section 15082 [d]). The NOP is provided to appropriate state agencies and invites them to offer comments during the scoping period, which lasts a minimum of 30 days following the filing of the NOP.

The NOI was published in the FR on February 11, 2002, and the NOP was released on February 20, 2002. Copies of the NOI and NOP and related notices are contained in Appendix E to this EIS/EIR.

Public agencies formally or informally contacted and consulted during the preparation of this environmental document are listed below. These agencies received notification of the proposed EIS/EIR and the public scoping meeting.

Federal

- National Oceanic and Atmospheric Administration Fisheries Service (formerly National Marine Fisheries Service)
- U.S. Army Corps of Engineers, Sacramento District
- U.S. Bureau of Reclamation

- U.S. Environmental Protection Agency, Region IX
- U.S. Fish and Wildlife Service
- U.S. Fish and Wildlife Service/Stone Lakes National Wildlife Refuge

State

- California Air Resources Board
- California Department of Conservation
- California Department of Fish and Game
- California Department of Food and Agriculture
- California Department of Transportation, District 3
- California Department of Transportation, Planning
- California Department of Water Resources
- California Highway Patrol
- California Public Utilities Commission
- Central Valley Regional Water Quality Control Board
- Native American Heritage Commission (and other local Native Americans)
- Reclamation Board
- State Lands Commission
- State Office of Historic Preservation
- State Water Resources Control Board

Local

- City of Elk Grove Planning Department
- City of Sacramento Department of Transportation
- City of Sacramento Planning and Building Department
- Sacramento Area Council of Governments
- Sacramento Area Flood Control Agency
- Sacramento County Department of Environmental Review and Assessment
- Sacramento County Department of Public Works
- Sacramento County Department of Transportation
- Sacramento County Water Agency
- Sacramento Local Agency Formation Commission
- Sacramento Metropolitan Air Quality Management District

- Sacramento Regional County Sanitation District
- Sacramento Regional County Sanitation District/Bufferlands
- Sacramento Regional Transit
- Sacramento Transportation Authority
- Yolo County Planning and Public Works

Regional

- East Bay Municipal Utility District
- Reclamation District 1000
- Sacramento Municipal Utility District, Engineering Department

Interested Parties and Others

- California Native Plant Society
- Clarksburg Advisory Committee
- Environmental Council of Sacramento
- KB International
- M&H Realty
- Montgomery Watson Harza
- Pacific Gas & Electric Company
- Parsons Transportation
- Randy Yonemura
- Stone Family Trust
- Union Pacific Railroad

6.1.2 Public Outreach Activities

Summary of Public Outreach

A public outreach program was created and implemented during the I-5/Cosumnes River Boulevard Interchange Project. The program included local official briefings; public meetings/open houses; individual contacts and meetings with property owners, businesses, and interested citizens; and direct mail. The City of Sacramento and Caltrans have been supportive of and involved in the project.

Local Official Briefings

The project was presented to Councilmember Bonnie Pannell and her staff on January 14, 2002 at City Hall. The proposed project was presented by City staff and representatives of Mark Thomas & Company (MTCo, engineering consultant), Jones & Stokes (environmental consultant), and MMC Communications (public outreach). Councilmember Pannell requested

that the environmental scoping meeting/map display workshop be held at the Pannell Center in Meadowview; that the mailing area for the workshop include Meadowview Road to the north and Franklin Boulevard to the east; and that a separate meeting be held with the Freeport community.

Updates to the project have been provided to Councilmember Pannell's staff throughout the design phase of the project. Councilmember Pannell's staff, plus Councilmember Water's staff, have been participants in the various Project Development Team (PDT) meetings, and are on the PDT distribution list for all agendas and meeting minutes.

Public Meetings/Open Houses

Several public meetings/open houses were held in the project area to inform individuals and groups about the project. Two of these meetings were held during the scoping period for the EIR/EIS. Comments received as a result of the scoping process are included in Appendix E.

The first meeting was Thursday, March 14, 2002, from 5 to 8 p.m. at the Antioch Progressive Baptist Church, 7650 Amherst Street, Sacramento in Meadowview just north of the project area. A postcard mailer (Exhibit A) was sent by first-class mail to approximately 4,300 residents surrounding the project informing them about the workshop. A separate letter invitation (Exhibit B) was sent by first-class mail to approximately 40 property owners, agencies, community associations, and homeowner groups, and interested groups informing them of the meeting and requesting their attendance.

Information concerning project design, project scheduling, cost, and environmental issues was available at the workshop. Maps and plans of the proposed project were on display and staff from Caltrans, City, MTCo, and Jones & Stokes were present to talk with individuals and answer questions. Several stations presented information about the project (engineering, environmental, and schedule). Members of the public signed in as they entered and were given comment cards (Exhibit C) that could be turned in that meeting or mailed to the City of Sacramento at a later date for inclusion in the public records. This meeting was attended by approximately 40 people. Since the workshop was intended to be informational, and available to residents that were on their way home from work, no formal presentation was conducted. The workshop was held as a "drop-in" map display with separate stations for the proposed project (engineering, environmental, and schedule) and separate stations for various projects in the project area (I-5/Cosumnes River Boulevard Extension Project, Freeport Water Diversion Project, the Regional Transit [RT] South Sacramento Phase 2 Light Rail Extension Project), and the Lower Northwest Sewer Interceptor Project). No major project issues or questions were identified at this meeting; however, comments were generally supportive, with some concern expressed over the project's potential to induce the development of open space and accompanying increases in traffic and noise.

A second public meeting was held Wednesday, March 27, 2002 at 6 p.m. at the Freeport Improvement Association meeting held at the Moon River Inn, 8201 Freeport Boulevard, Freeport. This meeting was noticed in both *The Sacramento Bee* and *The Daily Recorder* (Exhibit D). There was a brief presentation by project engineers (purpose and need, project design, funding, environmental issues, and project schedule) to approximately 20 people followed by questions and answers. The focus on the presentation was on issues specific to the

Freeport community. City, Caltrans, MTCo, and Jones & Stokes staff were available to answer questions. Most of the questions related to the timing of the proposed annexation of Freeport to the City of Sacramento. In general, there was support for the roadway/interchange project. Comments at the meeting related to the potential for the proposed project to improve access to the businesses and commercial enterprises in the unincorporated community of Freeport. Other comments related to concerns over the effect of improving access to I-5–and the perceived increase in traffic–on the "Delta River Town" character of the community.

The Freeport Improvement Association requested that the project be presented at a follow-up meeting on June 26, 2002, to present the following information: environmental process, connection to Freeport Boulevard (why or why not, public safety benefits), proposed intersection designs, and traffic modeling projects.

The design engineer also presented the project to the Advisory Committee for Clarksburg (a small community located to the southwest of the project area across the Sacramento River in the County of Yolo) in April 2002.

In addition to these meetings, Cosumnes River Boulevard project design staff attended workshops for related and/or adjacent projects, including an overall combined project meeting held February 26, 2002, at the Pannell Community Center. Project staff also participated in the RT South Line Extension Project meetings held on March 25, 2002, at Cosumnes River College, April 11, 2002, at RT offices, and April 11, 2002, at the Pannell Center. Cosumnes River Boulevard staff attended public outreach meetings associated with the Freeport Water Diversion Project on April 11, 2002, at the Bartley Cavanaugh Golf Course and April 15, 2002, at the Fire Station near Rancho Cordova to answer any questions that might be asked about the Cosumnes River Boulevard Extension Project.

City and MTCo staff also attended public outreach meetings associated with these related projects in 2003 and 2004.

Meetings with Individual Property Owners

During the course of the project, major property owners affected by the project (Sacramento Regional County Sanitation District Bufferlands, Stone Family Trust, and representatives of Delta Shores) were invited to attend PDT meetings or one-on-one meetings to discuss project design issues. Comments were solicited from these major property owners throughout the process.

Summary of Major Concerns

The major concerns expressed by the public at these meetings and answers to these questions are described below.

Question 1. Will farm equipment be able to use the new overcrossing?

Answer: Yes.

Question 2. What is the capacity of Freeport Boulevard? Will Freeport Boulevard south of Cosumnes River Boulevard be widened? Will Freeport Boulevard north of Cosumnes River Boulevard be widened?

Answer: The environmental document will include a detailed traffic analysis that includes a description of major roads and facilities in the project area. The proposed project would not require widening of Freeport Boulevard north or south of Cosumnes River Boulevard; however, the intersection of Freeport Boulevard and Cosumnes River Boulevard would require minor widening for turn lanes.

Question 3. Is Freeport Boulevard wide enough to accommodate the future Delta Shores project?

Answer: The traffic analysis conducted for the I-5/Cosumnes River Boulevard project assumes that Delta Shores would develop according to land uses in the adopted City of Sacramento General Plan. Based on that analysis, Freeport Boulevard is wide enough to accommodate the Delta Shores project. It should be noted, however, that the Delta Shores project will likely submit a request for amendment to the General Plan to reflect a different land use mix than is currently approved. The Delta Shores project will be required to undergo a separate environmental review prior to construction.

Question 4. Why is the City analyzing a north and south alignment? We prefer the north alignment. (Comment made by landowners in the property area.)

Answer: At the commencement of environmental review for the proposed project, the Federal Highway Administration (FHWA) requested that both north and south alignments be analyzed to determine if there were any site-specific issues, such as biological resources or cultural resources, which could be avoided depending on the alignment. Based on the analysis conducted to date, the site-specific issues associated with the north and south alignments are almost identical.

6.2 Tribal Coordination

NHPA Section 106 (36 CFR 800) regulations require that the agency official make a reasonable and good faith effort to identify any Indian tribes that might attach religious and cultural significance to historic properties in the area of potential effects (APE) and invite them to be consulting parties. Any such Indian tribes that request in writing to be a consulting party shall be a consulting party (36 CFR 800.3).

The agency official is also responsible for gathering information from any Indian tribe identified pursuant to 36 CFR 800.3(f) to assist in identifying properties, including those not located on tribal lands, that may be of religious or cultural significance to them and may be eligible for the NRHP, recognizing that an Indian tribe maybe reluctant to divulge specific information regarding the location, nature, and activities associated with such sites. The agency official should address concerns raised about confidentiality pursuant to 36 CFR 800.11(c).

As described in section 3.9.3, on July 23, 2001, Jones & Stokes requested a search of the sacred lands file from the NAHC in Sacramento. Jones & Stokes also requested a list of Native American contacts for the project area who are knowledgeable of Native American cultural resources and concerns pertinent to the proposed action. NAHC responded by facsimile transmission on July 30, 2001. The sacred lands file search did not indicate the presence of Native American cultural resources in the project area. NAHC provided Jones & Stokes with a list of Native American contacts for Sacramento County. Jones & Stokes contacted the individuals and organizations on the contact list via project notification letters dated August 7, 2001. Follow-up telephone calls were made to all parties on the NAHC list on November 1, 2001.

Consultation with Native Americans resulted in general and specific information regarding cultural resources and Native American concerns pertinent to the proposed action. City and Caltrans representatives met with Native American representatives on November 9, 2001, to discuss Native American concerns and study methods. All correspondence with Native Americans is provided in the historic property survey report prepared for the proposed action (Jones & Stokes 2003f) and available for review at City offices.

Chapter 7 Mitigation Monitoring and Reporting Program

7.1 Introduction

A combined environmental impact statement/environmental impact report (EIS/EIR) was prepared to comply with the National Environmental Protection Act (NEPA) and the California Environmental Quality Act (CEQA) for the Interstate-5/Cosumnes River Boulevard project (herein called the proposed project). The EIS/EIR identified potentially significant or potentially adverse environmental impacts in the following areas as well as mitigation measures to reduce these impacts, where feasible.

- Aesthetics/Visual
- Agriculture
- Air Quality
- Biological Resources
- Cultural Resources
- Hazards and Hazardous Materials
- Hydrology/Water Quality
- Land Use/Planning
- Noise
- Public Services and Utilities
- Transportation and Traffic
- Cumulative Impacts

This mitigation monitoring and reporting program (MMRP) checklist lists the mitigation measures proposed to be implemented by the City of Sacramento for the proposed project, identifies the parties responsible for implementation and monitoring, and identifies the timing of mitigation.

7.2 Project Description

The City of Sacramento (City), in conjunction with the Federal Highway Administration (FHWA) and California Department of Transportation (Caltrans), is proposing to construct the Interstate 5 (I-5)/Cosumnes River Boulevard Interchange Project (proposed action). The City is the state lead agency under the California Environmental Quality Act (CEQA). FHWA is the federal lead agency under the National Environmental Policy Act (NEPA), with Caltrans

delegated as lead oversight. FHWA must approve the new connection to I-5 and may be providing funding for a portion of the proposed action.

The interchange would be located in southwest Sacramento. The proposed action would include extending Cosumnes River Boulevard from its current westerly terminus at Franklin Boulevard to an interchange at I-5, and then farther west to an at-grade intersection with Freeport Boulevard in the currently unincorporated town of Freeport. As described in Chapter 2, "Project Alternatives," two build alternatives are being considered.

Figure 1-1 identifies the location of the proposed action within the Sacramento County vicinity. Figure 1-2 shows the location in more detail within southwestern Sacramento. Figure 1-3 provides a topographic map of the project area.

Cosumnes River Boulevard is a major east-west arterial roadway in Sacramento. Part of the roadway is already constructed, from Franklin Boulevard to State Route (SR) 99, at which point it becomes Calvine Road within unincorporated Sacramento County. Calvine Road is a major arterial, extending east to Grant Line Road and servicing major growth areas in south Sacramento County. The City of Sacramento General Plan (City General Plan) (City of Sacramento 1988, as amended through 2000) includes extension of Cosumnes River Boulevard westerly of Franklin Boulevard with an interchange at I-5.

The most significant north-south interregional facilities in the project area are I-5 and SR 99. The proposed action would improve access between these facilities. I-5 is a six-lane freeway from the Elk Grove Boulevard interchange to the South Land Park Drive overcrossing, at which point it becomes an eight-lane freeway. Florin and Meadowview Roads are the major east-west corridors in the Airport-Meadowview Community Plan Area; both connect to I-5 and SR 99. Freeport Boulevard and 24th Street, which terminates just north of the project area, are the major north-south corridors in southern Sacramento. These roadways are shown on Figure 1-3.

7.3 Regulatory Background

This mitigation monitoring and reporting program has been prepared to comply with Section 21081.6(a)(1) of the Public Resources Code which requires the following:

> "The public agency shall adopt a reporting or monitoring program for the changes made to the project or conditions of project approval, adopted in order to mitigate or avoid significant effects on the environment. The reporting or monitoring program shall be designed to ensure compliance during project implementation."

This MMRP is intended to ensure the effective implementation of mitigation measures that are within the authority of the City of Sacramento to implement (including monitoring where identified) throughout all phases of development and operation of the proposed project.

7.4 Program Implementation

This MMRP (summarized in Table 7-1) lists all mitigation measures identified in the EIS/EIR for the proposed project. In general, monitoring becomes effective at the time the action is taken on the project. Timing of monitoring is organized as follows:

1. *Prior to Construction:* The monitoring activity consists of insuring that a particular mitigation action has taken place prior to the beginning of any construction or grading activities.
2. *During Construction:* The monitoring activity consists of active monitoring while grading or construction is occurring on the project site.
3. *Prior to Operation:* The monitoring activity consists of active monitoring after initial site grading and facility construction has occurred but prior to the initiation of project operations.
4. *Ongoing:* The monitoring activity consists of monitoring after the grading and construction phase of the project has been completed and relates to ongoing operation of the project.

The mitigation measures in Table 7-1 are numbered as they were described in the Chapter 4 of the EIR.

City of Sacramento staff will be responsible for implementing or ensuring that the mitigation actions listed in the MMRP are undertaken for this project. Implementation includes ensuring that any required actions are included in bid documents and contracts as part of the design/build process for the project and ensuring that the design/build contractors include specified mitigation activities in plans and specifications for construction. City of Sacramento staff responsibility includes designation of certain mitigation responsibility to, and continued oversight of, the design/build contractors and consultants.

Table 7-1. Mitigation Monitoring and Reporting Program Checklist for the I-5/Cosumnes River Boulevard Interchange Project

Mitigation Measure/Compliance Standard	Implementing Responsibility	Monitoring Responsibility for Implementing Measure	Timing	Verification of Compliance (Initials/Date)
Mitigation Measure HYD-1: Prepare and Implement a Drainage Plan for the Project Prior to project construction, the City or its contractor will prepare and implement a drainage plan for the project that will allow the estimated 4,000-cfs increase in runoff volume to pass with minor constrictions at culvert headways. The City will verify in construction plans that these designs have been included and will verify their proper installation concurrently with project construction.	City of Sacramento	City of Sacramento	Prior to construction; During construction	
Mitigation Measure HYD-2: Return Groundwater-Related Dewatering Effluent to Aquifer During dewatering, the City or its contractor will return all dewatering effluent to the aquifer. The method by which this will be achieved will be at the City's/contractor's discretion, but may include construction of infiltration basins. As a performance standard, all groundwater shall be returned to the aquifer. The City will review and approve all plans for this mitigation and perform monitoring during dewatering activities to verify that all groundwater returns to the aquifer.	City of Sacramento	City of Sacramento	Prior to construction; During construction	
Mitigation Measure WQ-1: Implement Measures to Maintain Groundwater Quality If an appreciable spill has occurred and results determine that project activities have adversely affected groundwater quality, a detailed analysis will be performed by a Registered Environmental Assessor to identify the likely cause of contamination. This analysis will conform to American Society for Testing and Materials standards, and include recommendations for reducing or eliminating the source or mechanisms of contamination. Based on this analysis, the City or its contractor will select and implement measures to control contamination, with a performance standard that groundwater quality must be returned to baseline conditions. These measures will be subject to City approval.	City of Sacramento	City of Sacramento	During construction; After construction	
Mitigation Measure WQ-2: Incorporate Source and Treatment Controls in Design (project falls into greater or equal to 5 acres road surface category) To reduce or eliminate water quality effects from polluted runoff from project facilities, the City or its contractor will implement multiple BMPs in areas with potential to drain to storm drainage systems or surface waters. As a performance standard, these BMPs will be selected to achieve maximum sediment removal and represent the Best Achievable Technology (BAT) that is economically achievable. The BMPs may include a combination of source control, structural improvements, and treatment systems. They may include but are not limited to the following. 1. Grass strips, high infiltration substrates, and grassy swales will be used where feasible to reduce runoff and provide initial stormwater treatment. 2. Small settling, treatment, or infiltration devices may be installed beneath paved areas to provide initial filtration before discharge into subsequent treatment systems or storm drainage systems. 3. Drains will discharge to natural surfaces or swales where possible to avoid excessive concentration and channelization of stormwater.	City of Sacramento	City of Sacramento	Prior to construction; During construction	

Table 7-1. Continued

Mitigation Measure/Compliance Standard	Implementing Responsibility	Monitoring Responsibility for Implementing Measure	Timing	Verification of Compliance (Initials/Date)
4. Permanent energy dissipaters for drainage outlets will be installed. 5. If necessary, retention or detention basins designed to provide effective water quality control will be installed. Basin features will include the following. a. Retention time for settling of fine particles will be maximized. b. Maintenance schedules will be established for periodic removal of sedimentation, excessive vegetation, and debris that may clog basin inlets and outlets. c. The retention basin elevation will be maximized to allow the highest amount of infiltration and settling before discharge. These BMPs shall be incorporated into project design before finalization of design and initiation of project construction. The City or its contractor will conduct routine (at least monthly) inspections of the construction area to verify that the identified BMPs are properly implemented and maintained. The City will notify its contractor immediately if there is a noncompliance issue and will require compliance.				
Mitigation Measure TR-1: Widen Cosumnes River Boulevard between Center Parkway and Bruceville Road Existing plus project conditions indicate that the City of Sacramento needs to widen Cosumnes River Boulevard between Center Parkway and Bruceville Road from one to two lanes in each direction. Implementation of this mitigation measure would provide LOS A operations. This mitigation measure is listed in the regional Metropolitan Transportation Plan (MTP) for 2025 as a future improvement. The mitigation measure is not currently listed in the City's Capital Improvement Program (CIP), as it is a five-year expenditure plan that provides a financial strategy for the City's infrastructure improvements. Given that funding is currently not allocated to this mitigation measure in the City's CIP, this mitigation measure is not certain.	City of Sacramento	City of Sacramento	TBD	
Mitigation Measure TR-2: Widen the Eastbound Approach to the Freeport Boulevard/Meadowview Road Intersection To Provide One Additional Left-Turn Lane Existing plus project conditions indicate that the City of Sacramento needs to widen the eastbound approach to the Freeport Boulevard/Meadowview Road intersection to provide one additional left-turn lane. With this improvement the eastbound approach to the intersection would have two left-turn lanes, one through lane, and a shared through/right-turn lane and would be substantially consistent with City General Plan policies regarding level of service on streets and roads. Implementation of this mitigation measure would provide LOS D operations during the a.m. peak hour. Based on preliminary review of this improvement, there appears to be sufficient pavement width in the eastbound direction to shift the through lanes and free up space for the eastbound left turn lane via restriping and minor signal modifications (moving the detector loops). The estimated cost for this measure is approximately $40,000 to $80,000.	City of Sacramento	City of Sacramento	TBD	

Table 7-1. Continued

Mitigation Measure/Compliance Standard	Implementing Responsibility	Monitoring Responsibility for Implementing Measure	Timing	Verification of Compliance (Initials/Date)
Mitigation Measure TR-3: Improve the Center Parkway/Cosumnes River Boulevard Intersection Existing plus project conditions indicate that the City of Sacramento needs to improve the Center Parkway/Cosumnes River Boulevard intersection by providing one left-turn lane, two through lanes, and one right-turn lane on the eastbound and westbound approaches to the intersection. Implementation of this mitigation measure would provide LOS D operations during the a.m. and p.m. peak hours. This project would be constructed as part of the widening of Cosumnes River Boulevard between Center Parkway and Bruceville Road and between Center Parkway and Franklin Boulevard, which is listed in the MTP for 2025 as a future improvement. The mitigation measure is not currently listed in the City's Capital Improvement Program (CIP), as it is a five-year expenditure plan that provides a financial strategy for the City's infrastructure improvements. Given that funding is currently not allocated to this mitigation measure in the City's CIP, this mitigation measure is not certain	City of Sacramento	City of Sacramento	TBD	
Mitigation Measure TR-4: Widen Cosumnes River Boulevard between Center Parkway and Franklin Boulevard Under cumulative plus project conditions, the City of Sacramento would need to widen Cosumnes River Boulevard between Bruceville Road and Franklin Road from two to three lanes in each direction to accommodate the projected traffic volumes at levels of service acceptable to the City of Sacramento. However, acquiring the right of way to accommodate this widening is not feasible and therefore the impact of the proposed action would be considered significant and unavoidable. There is adequate right of way to widen Cosumnes River Boulevard between Bruceville Road and Franklin Boulevard from one to two lanes in each direction. The segment from Bruceville Road to Center Parkway, including widening the intersection of Center Parkway/Cosumnes River Boulevard was identified in Mitigation Measure TR-1 and TR-3 and the impact of the project on this segment was considered significant and unavoidable. Widening the segment from Center Parkway to Franklin Boulevard to two lanes in each direction is listed in the MTP for 2025 as a future improvement. The mitigation measure is not currently listed in the City's Capital Improvement Program (CIP), as it is a five-year expenditure plan that provides a financial strategy for the City's infrastructure improvements. Given that funding is currently not allocated to this mitigation measure in the City's CIP, this mitigation measure is not certain.	City of Sacramento	City of Sacramento	TBD	

Table 7-1. Continued

Mitigation Measure/Compliance Standard	Implementing Responsibility	Monitoring Responsibility for Implementing Measure	Timing	Verification of Compliance (Initials/Date)
Mitigation Measure TR-5: Installation of a Future Traffic Signal at the SR 160/Freeport Bridge Intersection Cumulative traffic conditions with or without the project indicate a need to improve operations at this intersection. In order to improve operations at this intersection, a traffic signal would need to be installed and the northbound approach to the SR 160/Freeport Bridge intersection would need to be widened to provide a left-turn pocket. In addition, the southbound approach to the intersection would need to be widened to provide a right-turn pocket. Implementation of this mitigation measure would provide LOS C operations during the a.m. and p.m. peak hours; however, the SR 160/Freeport Bridge intersection is located outside the City of Sacramento city limits and improvements to this intersection must be reviewed and approved by the County of Sacramento and Caltrans. The City of Sacramento does not have jurisdiction to implement this mitigation measure.	City of Sacramento	City of Sacramento, Sacramento County, Caltrans	TBD	
Mitigation Measure WTL-1: Avoid or Minimize Indirect Impacts on Wetlands Orange construction barrier fencing will be installed to identify and help protect ESAs. The construction specifications will require that a qualified biologist identify sensitive biological habitat onsite and identify areas to avoid during construction. Sensitive biological habitat is identified as habitat and potential habitat for listed species (e.g., vernal pool fairy shrimp, vernal pool tadpole shrimp, mid-valley fairy shrimp, VELB, giant garter snake), as well as habitat for non-listed species (e.g., drainages, riparian vegetation, trees) as identified by the biologist. The ESAs will be identified by a qualified biologist on the construction drawings before bid documents are released. The following paragraph will be included in the construction specifications: The Contractor's attention is directed to the areas designated as "Environmentally Sensitive Areas." These areas are protected, and no entry by the Contractor for any purpose will be allowed unless specifically authorized in writing by the City and Caltrans. The Contractor will take measures including giving written notice to employees and subcontractors to ensure that Contractor's forces do not enter or disturb these areas. Temporary fences around the ESAs will be installed as the first order of work. Temporary fencing will be 1.2 m (4 ft) high, commercial-quality woven polypropylene, orange in color, and will be installed around the following sensitive biological resources to be avoided: 1. Delineated wetlands within 76.2 m (250 ft) of the construction area 2. Delineated wetlands in the construction area (to be placed at the edge of the 30.5-m-wide [100-ft-wide] construction zone) This fencing will protect existing resources and prevent encroachment by construction vehicles and personnel. The exact location of the fencing will be determined by a qualified biologist with the goal of protecting sensitive biological resources. The fencing will be tightly strung on posts with a maximum 3-m (10-ft) spacing. The fencing will be installed in a manner that prevents any equipment from extending the	City of Sacramento	City of Sacramento	Prior to construction; During construction	

Table 7-1. Continued

Mitigation Measure/Compliance Standard	Implementing Responsibility	Monitoring Responsibility for Implementing Measure	Timing	Verification of Compliance (Initials/Date)
work area unnecessarily beyond the area necessary to complete the work. Temporary fences will be furnished and constructed, inspected weekly, maintained, and later removed, as shown on the plans, as specified in the special provisions, and as directed by the project engineer. The contractor shall prohibit any storage, parking, or construction staging within 76.2 m (250 ft) of avoided delineated wetlands.				
Mitigation Measure WTL-2: Compensate for Loss of Wetlands The City of Sacramento will purchase mitigation credits to compensate for the direct loss of seasonal emergent wetland and freshwater marsh/drainageway habitat within the road footprint and indirect loss of freshwater marsh habitat within the bridge footprint. Compensation for the riparian component of these wetlands will include on-site tree planting (refer to section 3.18, "Vegetation"). Seasonal emergent wetland feature 2, freshwater marsh wetland features 3, 4, 6, and 8, and drainageway feature 9 are minimally disturbed, relatively high functioning wetlands and will be mitigated at a 2:1 ratio. Seasonal emergent wetland feature 11 is located within actively cultivated agricultural land, supports minimal vegetation, and is subject to plowing on a regular basis. Due to the lower habitat value of wetland feature 11, it will be mitigated at a 1:1 ratio. Mitigation costs are estimated at approximately $20,000 per acre at an approved mitigation bank. Based on the ratios described above and the impacts identified in Table 3.17-1, the cost of mitigation would range from approximately $30,000 to $35,000.	City of Sacramento	City of Sacramento	Prior to construction	
Mitigation Measure VEG-1: Prevent the Introduction or Spread of Noxious Weeds The contractor will be responsible for avoiding the introduction of new noxious weeds and the spread of weeds previously documented at the project site. Accordingly, the following measures will be implemented during construction. 1. Educate construction supervisors and managers on weed identification and the importance of controlling and preventing the spread of noxious weed infestations. 2. Minimize surface disturbance to the greatest extent possible. 3. Seed all disturbed areas with certified weed-free native and nonnative mixes, as provided in the revegetation plan developed in cooperation with DFG. Mulch with certified weed-free mulch. Rice straw may be used to mulch upland areas. 4. Clean equipment before entering or exiting the project area. 5. Use native, noninvasive species or nonpersistent hybrids in erosion control plantings to stabilize site conditions and prevent invasive species from colonizing. 6. Provide all seed mixes to be used on SRCSD property to SRCSD Bufferlands staff for review and approval prior to use.	City of Sacramento	City of Sacramento	Prior to construction; During construction	

Table 7-1. Continued

Mitigation Measure/Compliance Standard	Implementing Responsibility	Monitoring Responsibility for Implementing Measure	Timing	Verification of Compliance (Initials/Date)
Mitigation Measure VEG-2: Protect Trees to Be Avoided by Construction Prior to construction, the City will ensure that a certified arborist shall identify and map trees to be saved and this information shall be provided to the contractor to ensure that trees to be saved are not harmed. Before any ground-disturbing activity, the contractor will be required to install a minimum 1.2-m-tall (4-ft-tall) commercial-quality woven orange polypropylene construction fence around the driplines of oak trees and riparian vegetation in the construction area. This fencing will protect existing resources and prevent encroachment by construction vehicles and personnel. The exact location of the fencing will be determined by a qualified biologist with the goal of protecting sensitive biological resources. The fencing will be strung tightly on posts with a maximum 3-m (10-ft) spacing. The fencing will be installed in a manner that prevents any equipment from extending the work area unnecessarily beyond the area necessary to complete the work. The fencing will be checked and maintained weekly until all construction is completed.	City of Sacramento	City of Sacramento	Prior to construction; During construction	
Mitigation Measure VEG-3: Compensate for Loss of Protected Trees Removal of mature native riparian trees, which include willows or cottonwoods that measure 15.2 cm (6 in) dbh or more, will be avoided near Morrison Creek to the maximum extent possible. The City will compensate for the loss of mature native trees removed for construction or shaded as a result of the overpass construction at a 1:1 ratio of dbh (one inch of dbh planted for inch of dbh removed). A planting plan prepared by a licensed landscape architect who has experience with riparian plantings in the Sacramento area will be required. Replacement trees will be of the same species as those removed and will be planted as close to the original location of the removed trees as feasible. The City will monitor the planted trees annually for 5 years, with a goal of 80% survival. If fewer than 80% of the replacement trees have survived at the end of the 5-year monitoring period, replanting and an additional 5 years of monitoring will be conducted. Before project construction begins, the City will provide a qualified botanist or arborist to survey the affected oak trees in the Trail of Trees west of Franklin Boulevard to record an accurate location, species, size (dbh), and canopy diameter. This information will be submitted to the City Tree Services Department for review. Replacements are generally required on an inch-for-inch diameter basis (Pskowski 2002). The City will mitigate for removal of protected trees by transplanting the trees or planting oak trees on an inch-for-inch replacement basis near the original location in the Trail of Trees. Grading within the driplines of protected trees will be avoided wherever feasible. If grading must occur within the driplines of protected trees, replanting mitigation for these indirectly affected trees will be the same as that for removed trees (i.e., replacement based on an equal number of inches of dbh will be planted near the original location). Monitoring requirements will be for 5 years as described above for native riparian trees.	City of Sacramento	City of Sacramento	Prior to construction; During construction; Ongoing	

Table 7-1. Continued

Mitigation Measure/Compliance Standard	Implementing Responsibility	Monitoring Responsibility for Implementing Measure	Timing	Verification of Compliance (Initials/Date)
Mitigation Measure WLD-1: Avoid Impacts on Nesting Migratory Birds, Including Raptors Because construction activities would occur during the breeding season for migratory birds and raptors (generally, February 1 through August 15), a qualified biologist will conduct a survey before the start of construction activities to determine whether active nests are present within 0.4 km (0.25 mi) of the project site. If an active nest is found in this area, the City will contact DFG to determine the need for a no-disturbance buffer or the need to monitor the nest. Removal of any nest trees is expressly prohibited. If tree and shrub removal is required, removal should be conducted only outside the breeding season for migratory birds and raptors (generally, February 1 through August 15) (generally, trees can be removed from August 16 through January 31). If tree or shrub removal is required during the breeding season, the City will hire a qualified biologist before removal to conduct surveys for active migratory birds and raptor nests in the trees. If active migratory bird or raptor nests are found in the trees proposed for removal, the City will consult with USFWS and with DFG before tree removal to develop an MOU to promote the conservation of migratory bird populations.	City of Sacramento	City of Sacramento	Prior to construction; During construction	
Mitigation Measure TES-1: Environmental Education Program 1. The applicants shall include a copy of the USFWS biological opinion within its solicitations for design and construction of the proposed project making the primate contractor responsible for implementing all requirements and obligations included within the biological opinion, and to educate and inform all other contractors involved in the project as to the requirements of the biological opinion. A copy of the solicitations containing the biological opinion also will be provided to the Chief of Endangered Species (Central Valley) at USFWS. 2. At least 30 days prior to initiating construction activities, the project proponents shall submit the names and curriculum vitae of the biological monitor(s) for the proposed project. 3. An environmental education program that focuses on the importance of onsite biological resources, including special status species, will be developed and implemented. All construction personnel, including contractors, will receive this Service-approved environmental awareness training, which will be conducted by a Service-approved biologist. The training will include information on the special status species, including the snake, the beetle, and the listed vernal pool crustaceans, the required avoidance and minimization measures to avoid take of these species and their habitats, and possible penalties for not complying with the requirements. The Service-approved biologist will inform all construction personnel about the life history of these special status species, the importance of onsite habitats for these species, and the terms and conditions of this biological opinion. Written documentation of the training must be submitted to the Sacramento Fish and Wildlife Office within 30 days of the completion of training. As needed, training shall be conducted in Spanish for Spanish language speakers.	City of Sacramento	City of Sacramento	Prior to construction	

Table 7-1. Continued

Mitigation Measure/Compliance Standard	Implementing Responsibility	Monitoring Responsibility for Implementing Measure	Timing	Verification of Compliance (Initials/Date)
Mitigation Measure TES-2: Avoid and Minimize Indirect Impacts on Special-Status Wildlife Species 1. The project proponents will ensure that the temporary loss of giant garter snake, valley elderberry longhorn beetle, and vernal pool crustacean habitat is confined to the proposed project site. Prior to the commencement of construction activities, high visibility fencing that is at least 5 feet tall will be erected around the habitats of these federally listed species to identify and protect these designated ESAs from encroachment of personnel and equipment. These areas will be avoided by all construction personnel. The fencing shall be inspected before the start of each work day and maintained by the project proponents until completion of the project. The fencing may be removed only when the construction of the project is completed. a. Fencing will be established at least 200 ft from the edge of aquatic snake habitat. b. Fencing will be established at a minimum setback of 20 feet from the dripline of each elderberry shrub that is within 100 feet of the proposed project alignment. c. Fencing will be established at a minimum distance of 250 feet from the edge of vernal pool habitat. 2. Signs will be posted every 50 feet along the edge of ESAs, with the following information: "This area is habitat of federally-threatened and/or endangered species, and must not be disturbed. These species are protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." The signs should be clearly readable from a distance of 20 feet, and must be maintained for the duration of construction. 3. After construction activities are complete, any temporary fill or construction debris shall be removed and disturbed areas restored to their pre-project conditions. 4. A Service-approved biologist will inspect construction-related activities at the project site where threatened and endangered species are located (i.e., Morrison Creek bridge and the Cosumnes River Boulevard/Franklin Road intersection) to ensure that no unauthorized take of federally listed species or destruction of their habitat occurs. The biologist will have the authority to stop construction activities that may result in such take of species or destruction of habitat until appropriate corrective measures have been completed. The biologist will be required to immediately report any unauthorized impacts to the Service. 5. Any unauthorized deviation from these proposed conservation measures will be reported within one (1) working day of its discovery to the Division Chief of Endangered Species at the Sacramento Fish and Wildlife Service Office. Written notification to the Service must be made within three (3) calendar days and include the date, time, and precise location of the event on a 7.5-minute quadrangle, and any other pertinent information. In addition, color photographs shall document the incident and be included in the written notification.	City of Sacramento	City of Sacramento	Prior to construction; During construction; After construction	

Table 7-1. Continued

Mitigation Measure/Compliance Standard	Implementing Responsibility	Monitoring Responsibility for Implementing Measure	Timing	Verification of Compliance (Initials/Date)
6. Measures consistent with the current Caltrans' Construction Site Best Management Practices (BMPs) Manual, including the Storm Water Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) Manuals, will be implemented to minimize effects to the snake during construction. Best management practices will be implemented to prevent sedimentation from entering ESAs and to reduce erosion, dust, noise, and other deleterious aspects of construction related activities. These BMPs may include, but are not limited to, silt fencing, temporary berms, restrictions on cleaning equipment in or near ESAs, installation of vegetative strips, and temporary sediment disposal. Runoff from dust control and hazardous materials will be retained on the construction site and prevented from flowing into the ESAs. 7. During construction operations, the number of access routes, number and size of staging areas, and the total area of the proposed project activity will be limited to the minimum necessary. Routes and boundaries will be clearly demarcated. Movement of heavy equipment to and from the project site will be restricted to established roadways to minimize habitat disturbance. Project-related vehicles shall observe a 20-mile-per-hour speed limit within construction areas, except on City and County roads and on County, State, and Federal highways. This is particularly important during periods when the snake may be sunning or moving on roadways. All heavy equipment, vehicles, and supplies will be stored at the designated staging area at the end of each work period. 8. During construction operations, stockpiling of construction materials, portable equipment, vehicles, and supplies will be restricted to the designated construction staging areas and exclusive of the ESAs. The applicant will ensure contamination of habitat does not occur during such operations. All workers will be informed of the importance of preventing spills and appropriate measures to take should a spill occur.				
Mitigation Measure TES-3: Avoid Indirect Impacts on Listed Vernal Pool Invertebrates 1. Prior to the initiation of construction activities, the project proponent shall compensate for indirect effects to the habitat of listed vernal pool crustacean by purchasing the equivalent of 1.0 acre of vernal pool habitat preservation credits within a Service-approved preservation bank. 2. The applicant shall ensure that activities that are inconsistent with the maintenance of the suitability of vernal pool crustacean habitat and the associated on-site watershed are prohibited. These include, but are not limited to (1) the alteration of existing topography that may alter hydrology into habitat for Federally-listed vernal pool crustaceans; (2) the placement of any new structures within suitable habitat; (3) dumping, burning, and/or burying of rubbish, garbage, or any other wastes and fill materials; (4) the placement of stormwater drains; (5) fire protection activities not required to protect existing structures at the proposed project site; and (6) use of pesticides or other toxic chemicals.	City of Sacramento	City of Sacramento	Prior to construction; During construction	

Table 7-1. Continued

Mitigation Measure/Compliance Standard	Implementing Responsibility	Monitoring Responsibility for Implementing Measure	Timing	Verification of Compliance (Initials/Date)
Mitigation Measure TES-4: Avoid Impacts on Valley Elderberry Longhorn Beetles 1. Project construction shall be prohibited within 100 feet of the elderberry plants during the beetle emergence and mating period (*e.g.*, March 15 through June 15) to eliminate any indirect effects of construction on the beetle or its eggs. 2. No application of herbicides, insecticides, and/or other chemical agents shall occur within 100-feet of the elderberry plants or where they might drift or wash into the area of the elderberry plants.	City of Sacramento	City of Sacramento	Prior to construction; During construction	
Mitigation Measure TES-5: Compensate for Direct Impacts on Valley Elderberry Longhorn Beetles 1. The 26 elderberry shrubs, which are located within 20 feet of the centerline of the proposed alignment of the project and cannot be avoided, shall be transplanted to a Service-approved conservation area. Transplanting must occur while the elderberry plants are dormant, between November and the first two weeks of February, after they have lost their leaves. The Service will be consulted prior to transplantation and a Service-approved biologist will monitor the transplanting activities. These shrubs will be transplanted according to the Service's July 9, 1999 *Conservation Guidelines for the Valley Elderberry Longhorn Beetle* (Beetle Conservation Guidelines; Service 1999a). a. The planting area shall be at least 1,800 square feet for each elderberry transplant. The elderberry shrubs shall be cut back to six feet from the ground or to 50 percent of its height—whichever is taller. The remaining trunks will be removed using a tree spade, backhoe, front loader, or other suitable equipment. The trunks and all stems measuring one inch or greater in diameter will be replanted at the conservation site as soon as possible. Care will be taken to ensure than the soil is not dislodged from the roots of the plants. The shrubs will be planted in an excavated hole approximately three to four feet deep, and will be planted so that the top of the rootballs are level with the surrounding ground surface. b. After the shrubs are planted, the soil will be saturated with water. Fertilizers or other supplements will not be used in the conservation site and pruning treatments will not be used on the shrubs because the effects of these substances on the beetle are not known. The manager of the conservation site will be responsible for any further maintenance and monitoring of the transplanted elderberry shrubs and the planting, maintenance, and monitoring of elderberry seedlings and associated native plants. 2. Prior to groundbreaking activities at the project site, the project proponents will purchase the equivalent of 26.0 beetle habitat credits at a Service-approved conservation bank. At least 111 rooted elderberry seedlings and 111 associated native plant species will be planted. The minimum area required is 0.92 acre (39,960 square feet) to ensure that no more than five elderberry seedlings and five associated native plants are planted per 1,800 square feet.	City of Sacramento	City of Sacramento	Prior to construction; During construction	

Table 7-1. Continued

Mitigation Measure/Compliance Standard	Implementing Responsibility	Monitoring Responsibility for Implementing Measure	Timing	Verification of Compliance (Initials/Date)
3. The conservation area shall be managed and monitored in perpetuity as outlined in the Beetle Conservation Guidelines. This includes the management and monitoring of the conservation area for either ten (10) consecutive years or seven (7) years over a 15-year period, with monitoring reports submitted for each monitoring year. Additionally, a management plan must be prepared which describes the long-term protection of this conservation area in order to protect the area in perpetuity as habitat for the valley elderberry longhorn beetle. 4. Seven additional elderberry shrubs adjacent to the proposed construction right-of-way will not be removed from the project site. These shrubs are between 20 ft (6 m) and 100 ft (30.5 m) of the proposed project alignment. The project proponent will install protective fencing a minimum of 20 ft (6 m) outside the perimeter of the driplines of these elderberry plants prior to initiating any construction activities on the site. Signs will be posted every 50 feet along the edge of the avoidance area, stating that the area is protected habitat. These buffer areas shall be protected from adverse effects resulting from the project. There will be no physical alterations of any type within the area enclosed by the fencing. Protective fencing shall be removed following project completion. 5. A post-construction walkthrough will be conducted to assess whether any damage occurred to vegetation within the buffer areas. Damage may include accidental cutting of vegetation or visible physical damage to roots, stems, and leaves. If damage is observed, vegetation within the buffer areas will be restored with appropriate native plant species. Erosion control measures and exotic weed abatement measures shall be implemented. If unanticipated damage is done to elderberry shrubs, the Service will be notified and appropriate compensation will be implemented.				
Mitigation Measure TES-6: Avoid Impacts on Giant Garter Snakes 1. The project proponents will conduct construction activity within giant garter snake habitat (*e.g.* aquatic, upland, and rice habitat) between May 1 and October 1. This is the active period for the snake and direct mortality is lessened, because snakes are expected to actively move and avoid danger. If it appears that construction activity may go beyond October 1, the project proponents will contact the Service as soon as possible and no later than September 15 to determine if additional measures are necessary to minimize take. Construction activities within 200 feet (61 m) from the banks of snake aquatic habitat will be avoided during the snake's inactive season. 2. Aquatic habitat will be dewatered 15 days prior to the initiation of construction activities. If complete dewatering is not possible, potential snake prey (*i.e.,* fish and tadpoles) will be removed so that snakes and other wildlife are not attracted to the construction area. 3. At most 24-hours before the start of construction activities, the project site will be surveyed for giant garter snakes by a qualified biologist. Surveys of the project area will be repeated if a lapse in construction activity of two weeks or greater occurs. 4. If excavation within the Morrison Creek channel is necessary, excavation for removal of accumulated sediments will be done by using equipment located on and operated from the top of the bank.	City of Sacramento	City of Sacramento	Prior to construction; During construction	

Table 7-1. Continued

Mitigation Measure/Compliance Standard	Implementing Responsibility	Monitoring Responsibility for Implementing Measure	Timing	Verification of Compliance (Initials/Date)
5. A qualified, Service-approved biologist will be available for monitoring throughout all phases of construction that may result in adverse affects to the giant garter snake. If giant garter snakes are observed in the construction area, the on-site monitoring biologist will have the authority to stop construction activities in the immediate area until appropriate corrective measures have been completed or it is determined that the snake will not be harmed. The biologist will redirect construction activities away from the snake, so that the snake will be allowed to move away from the work area on its own volition. The biologist will report any snakes encountered and any incidental take of the snakes to the Chief of the Endangered Species Division of the Sacramento Fish and Wildlife Service Office immediately, within three (3) working days.				
6. The project proponents will not place any plastic, monofilament, jute, or similar erosion control matting that could entangle giant garter snakes on the project site within 250 feet of giant garter snake habitat.				
7. To eliminate an attraction to predators of the snake, all food-related trash items, such as wrappers, cans, bottles, and food scraps, must be disposed of in closed containers and removed at least every other day from the entire project site.				
8. After completion of construction activities, the project proponents will remove any temporary fill and construction debris. The project proponents will restore all temporarily affected snake habitats, including aquatic habitat and upland habitat. The project proponents will restore all snake habitat subject to temporary ground disturbances, including storage and staging areas and temporary roads. These areas shall be re-contoured, if appropriate, and re-vegetated with appropriate locally collected native plant species to promote restoration of the area to pre-project conditions. Appropriate methods and plant species used to re-vegetate such areas will be determined on a site-specific basis in consultation with the USFWS and DFG. Restoration work may include replanting emergent vegetation Refer to the Service's *Guidelines for the Restoration and/or Replacement of Giant Garter Snake Habitat* (Service 1997). A written report shall be submitted to the Service within ten (10) working days of the completion of construction at the project site.				
9. The project proponents will maintain and monitor the project site for one year following the completion of construction and restoration activities. Monitoring reports documenting the restoration effort should be submitted to the Service upon the completion of the restoration implementation and one year after the restoration implementation. Monitoring reports should include photo-documentation, when restoration was completed, what materials were used, specified plantings, and justifications of any substitutions to the Service-recommended guidelines.				

Table 7-1. Continued

Mitigation Measure/Compliance Standard	Implementing Responsibility	Monitoring Responsibility for Implementing Measure	Timing	Verification of Compliance (Initials/Date)
Mitigation Measure TES-7: Compensate for Direct Impacts on Giant Garter Snakes To offset losses resulting from temporarily and permanently affected giant garter snake habitat, the applicant shall purchase off-site giant garter snake habitat credits from a Service-approved snake habitat conservation area servicing the area where the proposed project effects occur. All temporary effects will be compensated at a 1:1 ratio, and all permanent effects will be compensated at a 3:1 ratio, as provided for in the March 11, 2005 Biological Opinion. Prior to the initiation of construction activities, the project proponent will purchase snake habitat credits from a Service-approved snake conservation area to compensate for both temporarily affected and permanently affected snake habitat.	City of Sacramento	City of Sacramento	Prior to construction; During construction	
Mitigation Measure TES-8: Avoid Impacts on Northwestern Pond Turtles To reduce potential impacts to northwestern pond turtles, the City shall retain a biologist to conduct a survey for northwestern pond turtles within 24 hours of the start of construction activities in suitable habitat located in the construction easement. If a turtle is found in the construction easement, the biologist shall try to passively move the turtle out of the area. If a turtle becomes trapped during construction activities in the waterway, a biologist shall remove the turtle from the work area and place it downstream of the construction easement. Seasonal construction restriction applicable to giant garter snakes will serve to protect hibernating northwestern pond turtles.	City of Sacramento	City of Sacramento	Prior to construction; During construction	
Mitigation Measure TES-9: Avoid Impacts on Nesting Swainson's Hawks Swainson's hawks could establish nests in numerous locations that were not found to be active during initial surveys. Also, construction is expected to span multiple years. Therefore, a qualified biologist shall conduct preconstruction surveys each construction year to locate all active nest sites within 0.8 km (0.5 mi) of construction activities. A 0.4-km (0.25-mi) buffer zone around all known and suspected Swainson's hawk nests will be established. The 0.4-km (0.25-mi) buffer and a 91.4-m (100-yard[yd]) buffer shall be marked with specific identifiable flags. Construction shall be restricted to areas more than 91.4-m (100 yd) from active nests until after chicks have hatched in June. Vehicles shall be allowed to drive past the nest within that 91.4-m (100-yd) buffer zone, but shall not be allowed to stop. If, through consultation with the DFG, construction is allowed to occur within 0.4 km (0.25 mi) of an active nest, a biological monitor shall observe the nesting hawks for stressed/detrimental behavior that threatens nest success. If there appears to be a threat to nesting success resulting from construction activity within the 0.4-km (0.25-mi) buffer, work shall be halted until the hawk's behavior normalizes and the threat has dissipated. The most obvious and dangerous "detrimental behavior" occurs when the hawk is scared off the nest. If that occurs (even momentarily), construction shall stop immediately within 0.4 km (0.25 mi) of the nest for at least 1 hour after the hawk returns to the nest and her behavior appears to normalize. When construction resumes, if the hawk is scared off the nest a second time, the City's Contractor shall not resume construction within that 0.4-km (0.25-mi) zone until having consulted with DFG to discuss further options. Other stressors/detrimental behaviors that the monitor shall look for include the hawk being off the eggs while still on the nest (e.g., circling/walking around the nest and calling). The biological monitor shall also watch for signs that the hawks are paying attention to construction instead of behaving normally (e.g., sitting	City of Sacramento	City of Sacramento	Prior to construction; During construction	

Table 7-1. Continued

Mitigation Measure/Compliance Standard	Implementing Responsibility	Monitoring Responsibility for Implementing Measure	Timing	Verification of Compliance (Initials/Date)
calmly on the nest, watching out for or scaring away potential predators). When construction crews are within 0.4 km (0.25 mi) of an active nest, measures shall be taken to reduce the visibility of the humans to the greatest extent possible (e.g., work behind their vehicles, stay in their vehicles) because the appearance of people tends to disturb birds much more than vehicles and other machinery.				
Mitigation Measure TES-10: Compensate for Loss of Swainson's Hawk Foraging Habitat The City will mitigate for permanent impacts on 6.5 ha (16 ac) of foraging habitat by paying into a mitigation bank program approved by DFG. Costs for this mitigation are currently estimated at approximately $46,656 for 6.5 ha (16 ac) based on a rate of $2,916 per acre.	City of Sacramento	City of Sacramento	Prior to construction; During construction	
Mitigation Measure TES-11: Avoid Impacts on Nesting Special-Status Birds Special-status birds could establish nests in numerous locations that were not found to be active during initial surveys. Also, construction is expected to span multiple years. Therefore, a qualified biologist shall conduct preconstruction surveys each construction year to locate all active nest sites within 0.4 km (0.25 mi) of the construction easement. Direct disturbance, including removal of nest trees and activities in the immediate vicinity of active nests, shall be avoided during the breeding season (March through August) where feasible. No-disturbance buffers shall be established around each active nest to avoid disturbing nesting birds where feasible. The size and configuration of buffers shall be based on the proximity of active nests to construction, existing disturbance levels, topography, the sensitivity of the species, and other factors, and shall be established through coordination with DFG representatives on a case-by-case basis. Where it is determined to be infeasible to schedule construction to avoid constructing within 0.4 km (0.25 mi) of an active nest, the City or its Contractor shall monitor nest status to determine whether construction is disturbing nesting activities. If it is determined by a qualified biologist that the construction is adversely affecting nesting activities, construction activities within 0.4 km (0.25 mi) shall cease pending completion of nesting activities. Western burrowing owls are known to nest in the eastern portion of the study area along the Union House Creek levee. Potential habitat for Western burrowing owl in the west portion of the study area is located along Morrison Creek levee and along dirt roads in the SRCSD Bufferlands (Jones 2001). Western burrowing owls forage in grassland habitat in the project area. To avoid impacts on Western burrowing owl, a biologist will conduct a preconstruction survey for the owls along the project alignment plus a 75-m (250-ft) buffer on each side of the construction area. If Western burrowing owls are detected in the project area, the following measures will be implemented. 1. Occupied burrows will not be disturbed during the nesting season (February 1 through August 31). 2. When destruction of occupied burrows (outside the nesting season) is unavoidable, existing unsuitable burrows will be enhanced (enlarged or cleared of debris) or new burrows created (by installing artificial burrows) at a ratio of 2:1 on the protected lands site. Newly created burrows will follow guidelines established by DFG.	City of Sacramento	City of Sacramento	Prior to construction; During construction	

Table 7-1. Continued

Mitigation Measure/Compliance Standard	Implementing Responsibility	Monitoring Responsibility for Implementing Measure	Timing	Verification of Compliance (Initials/Date)
3. If owls must be moved away from the project area, passive relocation techniques (e.g., installing one-way doors at burrow entrances) will be used rather than trapping. At least 1 week will be necessary to accomplish passive relocation and allow owls to acclimate to alternate burrows. 4. The City will prepare a monitoring plan and provide long-term management and monitoring of the protected lands. The monitoring plan will specify success criteria, identify remedial measures, and require an annual report to DFG. 5. If avoidance is the preferred method of dealing with potential impacts, no disturbance should occur within 50 m (160 ft.) of occupied burrows during the nonbreeding season (September 1 through January 31) and within 75 m (250 ft.) during the breeding season. Avoidance also requires that at least 2.6 hectares (6.5 acres) of foraging habitat, contiguous with occupied burrow sites, be permanently preserved for each pair of breeding Western burrowing owls or single unpaired resident bird. The configuration of the protected site will be submitted to DFG for approval. 6. Compensation measures will follow the guidelines provided in the DFG staff report regarding mitigation of impacts on Western burrowing owls (DFG 1995). The City will compensate for the loss of Western burrowing owl foraging habitat and for any occupied burrows that will be destroyed as a result of the proposed action. Before project approval and before construction begins, the City will compensate for the removal of 6.50 hectares (16 acres) of Western burrowing owl foraging habitat. The estimated cost of compensation would be covered under the Swainson's hawk mitigation costs as the two species have similar habitat requirements.				
Mitigation Measure HAZ-1: Sampling, Testing, Removal, Storage, Transportation, and Disposal of Yellow Striping along Existing Roadway Yellow striping along Stonecrest will require removal for both Build Alternative A and Build Alternative B. If burial of pre-existing pavement by new paving is conducted, however, impacts would be considered beneficial: the burial process would nearly eliminate leaching of the lead incurred from precipitation. However, if striping paint is to be removed or impacted in any manner, sampling and testing of the yellow striping scheduled for removal should be performed to determine the presence of lead and chromium. All aspects of the project associated with removal, storage, transportation, and disposal shall be in strict accordance with appropriate regulations from the Code of Regulations (CCR). Disposal of the stripes will be at a Class 1 disposal facility.	City of Sacramento	City of Sacramento	Prior to construction; During demolition and construction	
Mitigation Measure HAZ-2: Develop a Health and Safety Plan (HASP) to Address Worker Health and Safety The amounts and levels of possible contamination relating to ADL and PCBs will be determined during the design phase. An ADL site investigation is required. As necessary, an HASP will be prepared to address worker safety when working with potentially hazardous materials, including, but not limited to potentially lead-bearing paint, transformer fluids, soils potentially containing ADL, and other construction related materials within Caltrans right-of-way for any soil disturbance.	City of Sacramento	City of Sacramento	Prior to construction; During construction	

Table 7-1. Continued

Mitigation Measure/Compliance Standard	Implementing Responsibility	Monitoring Responsibility for Implementing Measure	Timing	Verification of Compliance (Initials/Date)
Mitigation Measure HAZ-3: Sampling and Analysis of Transformer Fluid from Electrical Transformers If leaks from electrical transformers that will either remain within the project construction zone or will require removal and/or relocation are encountered before or during construction, the transformer fluid should be sampled and analyzed by qualified personnel for detectable levels of PCBs. A PCB site investigation is required within Caltrans right-of-way for any soil disturbance. The owner of the transformers shall verify the contents of the transformer prior to relocation and take proper mitigation actions if required. If PCBs are detected, the transformer shall be removed and disposed of in accordance with regulatory agency requirements. Any stained soil encountered below electrical transformers with detectable PCB levels shall also be handled and disposed of in accordance with regulatory agency requirements.	City of Sacramento	City of Sacramento	Prior to construction; During construction	
Mitigation Measure HAZ-4: Testing for Aerially Deposited Lead (ADL) in Surface/Near-Surface Soils A preliminary investigation and screening for ADL for portions of the project location immediately adjacent to I-5 to determine the levels of lead in the surface and near-surface soils will be performed during the design phase. Should ADL be encountered above the regulatory thresholds, these soils would be handled and/or disposed of in accordance with regulatory agency requirements.	City of Sacramento	City of Sacramento	Prior to construction	
Mitigation Measure HAZ-5: Comply with Caltrans Requirements to Demolish Bridge Structures The contract specifications will include Caltrans bridge demolition specifications that deal with disposal, handling, and health and safety issues related to structure demolition and hazardous waste. The specifications will require the Contractor to prepare a bridge demolition notification form and attachments to be submitted to the California Air Resources Board and Sacramento Metropolitan Air Quality Management District a minimum of 30 days prior to demolition. A special provision that deals with disposal, handling, and health and safety would be required.	City of Sacramento	City of Sacramento	Prior to construction; During construction	
Mitigation Measure HAZ-6: Sampling and Analysis of Any Import/Borrow Material Any material that may be imported for construction of the embankments for the interchange on I-5 or the Morrison Creek overcrossing will require approval for use and certification to be clear of actionable levels of hazardous waste. Testing may be required depending on the source location of the material.	City of Sacramento	City of Sacramento	Prior to construction	

Table 7-1. Continued

Mitigation Measure/Compliance Standard	Implementing Responsibility	Monitoring Responsibility for Implementing Measure	Timing	Verification of Compliance (Initials/Date)
Proposed Mitigation Measure NZ-1: Construct a Noise Barrier Along the North Side of the Alignment West of Franklin Boulevard Implementation of a minimum 3.1-m-high (10-ft-high) wall extending from Station 36+00 to 47+20 (west to east), as discussed above, would reduce increases in traffic noise to less than a 12-dB increase and would therefore eliminate substantial increases in traffic noise resulting from the project. As discussed above, the noise abatement design presented in this report is preliminary and has been conducted at a level appropriate for environmental review. Information on the physical characteristics of potential abatement measures (e.g., physical location, length, and height of noise barriers) is preliminary. The preliminary noise abatement design may be changed or eliminated from the final project design. Inclusion of noise barriers in the project design and the final design of those noise barriers, if included, will be decided based on the information contained in this report, final project design, and other pertinent information received during the public review process.	City of Sacramento	City of Sacramento	Prior to construction	
Mitigation Measure NZ-2: Employ Noise-Reducing Construction Practices The City will employ noise-reducing construction practices such that noise from construction activities does not exceed City noise ordinance standards during applicable hours. Measures may include but are not limited to the following. 1. Noise-generating construction activity will be limited to the hours of 7:00 a.m. and 6:00 p.m. Monday through Friday, and between 9:00 a.m. and 6:00 p.m. on Sunday. 2. All equipment will have sound-control devices no less effective than those provided on the original equipment. No equipment will have an unmuffled exhaust. 3. Construction equipment staging and operation shall be conducted as far away from sensitive receptors as possible, particularly during nighttime operations 4. As directed by the City, the contractor will implement appropriate additional noise mitigation measures including, but not limited to, changing the location of stationary construction equipment, shutting off idling equipment, rescheduling construction activity, notifying adjacent residents in advance of construction work, or installing acoustic barriers around stationary construction noise sources or construction sites.	City of Sacramento	City of Sacramento	During construction	

Table 7-1. Continued

Mitigation Measure/Compliance Standard	Implementing Responsibility	Monitoring Responsibility for Implementing Measure	Timing	Verification of Compliance (Initials/Date)
Mitigation Measure UT-1: Notify Residents, Businesses, Emergency Services Personnel, and Service Providers of Public Service and Utilities Disruption Affected businesses and residents will be notified when construction will start and once construction is underway. The City or its Contractor will ensure that affected businesses and residents are notified at least 1 week in advance of any lane or road closures, or disruptions of access. In addition, emergency response personnel, such as fire protection and law enforcement personnel, would be notified at least 1 week in advance of any lane or road closures so that alternate routes can be established. If any utility services, including water, wastewater, gas, and electric services, must be stopped during construction, service providers will provide advance notice to users. Construction activities will be designed and scheduled to minimize disruption of these services. Residents and businesses, including farms, will be notified 1 to 2 weeks before any planned disruptions to utility services.	City of Sacramento	City of Sacramento	Prior to construction; During construction	
Mitigation Measure UT-2: Adopt Utility Avoidance Measures Recommended by Underground Service Alert Evaluation During the design phase of the proposed action, before breaking ground, the project proponent will solicit an evaluation of the alignment by Underground Service Alert (USA), which provides a free "Call Before You Dig" service to all excavators (contractors, homeowners, and others), in central/northern California. A call to USA will automatically notify all USA members who may have underground facilities at the work site. In response, the members will mark or stake the horizontal path of the underground facilities, provide information about them, or give clearance to dig. This service protects the construction team, public, and environment from injury and hazards and protects underground facilities from being damaged.	City of Sacramento	City of Sacramento	Prior to construction	
Mitigation Measure UT-3: Comply with Emergency Service Travel Needs and Evacuation Routes and Plans Emergency service providers (law enforcement, fire protection, and ambulance services) will be notified of all construction activities, including any street closures, at least 1 week in advance. If any lane or street closures would hinder emergency services to a level deemed unacceptable by emergency service authorities, alternatives will be considered to comply with emergency service needs.	City of Sacramento	City of Sacramento	Prior to construction; During construction	
Mitigation Measure UT-4: Coordinate Construction Activities to Reduce Interference with Planned Infrastructure If construction on the proposed action, Lower Northwest Interceptor, and Freeport Intake (which are along the same alignment) would be concurrent, the City will coordinate with the other projects to allow access for construction of all three projects.	City of Sacramento	City of Sacramento	Prior to construction; During construction	

Table 7-1. Continued

Mitigation Measure/Compliance Standard	Implementing Responsibility	Monitoring Responsibility for Implementing Measure	Timing	Verification of Compliance (Initials/Date)
Mitigation Measure VIS-1: Prepare and Implement a Lighting Plan The City will require the contractor to prepare a lighting plan that demonstrates that project lighting and vehicle lights from vehicles traveling on the roadway will not increase ambient nighttime lighting conditions for surrounding residential properties by more than 0.5-foot candles, the recommended level of illumination for a walkway along a residential roadside. Designs for shields and directional lighting will be included in this plan. Shields and directional lighting will be used to minimize the distance at which light emanating from the proposed action is visible and to mitigate the effects of glare. In particular, the residential areas will be shielded from lighting effects to the extent feasible. The following points provide additional detail on luminaries to be incorporated into the lighting plan. 1. Luminaires should be cut-off-type fixtures that cast low-angle illumination to minimize incidental spillover of light onto adjacent properties and open space. Fixtures that project upward and horizontally should not be used. 2. Luminaires should be shaded and directed away from the residential and open space areas adjacent to the project site. 3. Luminaire lamps should provide good color rendering, natural light qualities, and used only where necessary for safety and security purposes. 4. Luminaire mountings should be downcast and the height of placement minimized to reduce potential for backscatter into the nighttime sky and incidental spillover into adjacent properties and open space. Luminaire mountings should have nonglare finishes.	City of Sacramento	City of Sacramento	Prior to construction	
Mitigation Measure VIS-2: Use Low-Sheen and Nonreflective Surface Materials on Walls, Railing, and Light Standards The City will require the contractor to design any retaining walls, railings, and light standards with low-sheen, nonreflective surface materials to reduce potential for glare.	City of Sacramento	City of Sacramento	Prior to construction	
Mitigation Measure VIS-3: Incorporate Design Characteristics to Minimize Visual Obtrusion The City will require the contractor to consider and include design characteristics to minimize the visual mass and presence of constructed elements to the extent possible. Specifically, structural and vertical elements such as bridges, railings, abutments, piers, supports, and similar features will have a minimum profile to reduce visual intrusion and obstruction. Supports, piers, and railings will have an "open" structure wherever possible to facilitate views beyond (i.e., "transparency"). Vertical elements will be designed at even intervals and spacing to create aesthetic rhythm. Finished surfaces on all vertical features should have color and sheen that minimize contrast with the daytime sky.	City of Sacramento	City of Sacramento	Prior to construction	

Table 7-1. Continued

Mitigation Measure/Compliance Standard	Implementing Responsibility	Monitoring Responsibility for Implementing Measure	Timing	Verification of Compliance (Initials/Date)
Mitigation Measure VIS-4: Incorporate Aesthetic Treatments within the Roadway Corridor The City will require the contractor to design the proposed action to provide aesthetic consideration to roadway features, including signage, safety devices, lighting, landscaping, shoulders, and other roadway hardware to the greatest extent possible. Plantings, materials, and finishes will be consistent with and complementary to the project context.	City of Sacramento	City of Sacramento	Prior to construction	
Mitigation Measure VIS-5: Provide Aesthetic Treatments to the Noise Barrier The City will require the contractor to provide aesthetic treatments to the noise barrier, including landscaping and low-sheen and non-reflective surface materials. The finish should be matted and roughened, and the use of smooth troweled surfaces and glossy paint should be avoided.	City of Sacramento	City of Sacramento	Prior to construction	
Mitigation Measure CR-1: Stop Work If Archaeological Materials Are Discovered during Construction If archaeological materials (e.g., chipped or ground stone, historic debris, building foundations, or nonhuman bone) are inadvertently discovered during ground-disturbing activities, the construction contractor will stop work in that area and within 30.5 m (100 ft) of the find until a qualified archaeologist can assess the significance of the find and develop appropriate treatment measures. Treatment measures shall be made in consultation with the City, Caltrans, FHWA, SHPO, and other consulting parties to the Section 106 review process. Treatment measures typically include development of avoidance strategies or mitigation of impacts through data recovery programs such as excavation or detailed documentation. If cultural resources are discovered during construction activities, the construction contractor and lead contractor compliance inspector will verify that work is halted until appropriate treatment measures are implemented.	City of Sacramento	City of Sacramento	During construction	
Mitigation Measure CR-2: Stop Work If Human Remains Are Discovered during Construction If human remains of Native American origin are discovered during ground-disturbing activities, it is necessary for the City and FHWA to comply with state laws relating to the disposition of Native American burials, which fall within the jurisdiction of the NAHC (PRC 5097). If human remains are discovered or recognized in any location other than a dedicated cemetery, the City and FHWA will not allow further excavation or disturbance within 100 m (328.1 ft) of the find or any nearby area reasonably suspected to overlie adjacent human remains until both of the following occur. 1. The County Coroner has been informed and has determined that no investigation of the cause of death is required. 2. If the remains are of Native American origin: a. The descendants from the deceased Native Americans have made a recommendation to the landowner or the person responsible for the excavation work for means of treating or disposing of, with appropriate dignity, the human remains and any associated grave goods as provided in PRC 5097.98, or	City of Sacramento	City of Sacramento	During construction	

Table 7-1. Continued

Mitigation Measure/Compliance Standard	Implementing Responsibility	Monitoring Responsibility for Implementing Measure	Timing	Verification of Compliance (Initials/Date)
b. NAHC was unable to identify a descendant or the descendant failed to make a recommendation within 24 hours after being notified by the NAHC.				

Chapter 8 List of Preparers and Reviewers

8.1 List of Preparers

8.1.1 City of Sacramento

Saed Hasan - Senior Engineer. B.S. University of Jordan, Jordan. M.S. South Dakota State University, Brookings, South Dakota. Seven years of experience working on state and local transportation projects.

Grace Hovey – Associate Planner. B.A. University of California, Santa Barbara. M.S. Humboldt State University. Twenty years of experience in preparing, reviewing, and approving environmental and resource management documents.

L.E. Buford, AICP – Principal Planner. B.S. Western Michigan University. Twenty-five years of experience in the field of urban, regional and environmental planning including oversight of preparation of CEQA/NEPA documents.

8.1.2 Jones & Stokes

Maggie Townsley – Associate Principal and Senior Environmental Planner. M.S. Community and Regional Planning, B.S. Geological Sciences, B.A. French, University of Texas, Austin. Fifteen years of experience preparing environmental documents to comply with CEQA and NEPA.
Contribution: Principal in charge

Victoria Axiaq – Senior Project Manager. M.A. English, California State University, Sacramento; B.A. English, University of Arkansas at Little Rock. Fifteen years of experience preparing environmental documents to comply with CEQA and NEPA.
Contribution: Project manager

Ellen Turpin-Dennig – Environmental Specialist. B.A. Integrative Biology, Emphasis in Ecology, University of California, Berkeley. Two years of experience.
Contribution: Project Coordinator; Section Author – Visual and Aesthetics, Land Use, Farmlands and Agriculture, Geology/Soils/Seismic/Paleontology, Community Impacts, Growth, Hazards and Hazardous Materials, Utilities and Emergency Services, Energy.

Jody Job – Senior Publications Specialist. Twenty-seven years of experience.
Contribution: Document Coordinator

David Byrd – Architectural Historian. M.A. History (Public History), B.A. History, California State University, Sacramento. Fifteen years of experience.
Contribution: Section Author – Cultural Resources

Dave Buehler – Acoustical Engineer and Associate Principal. B.S. Civil Engineering, California State University, Sacramento. Twenty-three years of experience.
Contribution: Senior Peer Review – Noise

Susan Bushnell – Senior Botanist and Wetland Ecologist. B.S. Plant Ecology (emphasis in Conservation and Resource Studies), College of Natural Resources, University of California, Berkeley. Thirteen years of experience.
Contribution: Senior Peer Review – Wetlands and Other Waters of the United States, Vegetation

Joel Butterworth – Soil and Wetland Specialist. M.S. Geography (minor in Soil Science), Oregon State University, Corvallis; B.A. Geography, University of California, Santa Barbara. Fifteen years of experience.
Contribution: Senior Peer Review – Farmlands and Agriculture, Geology/Soils/Seismic/ Paleontology

Adam Crocker – Environmental Specialist. BSLA Landscape Architecture, (specialization in GIS and environmental planning), University of California, Davis. Three years of experience.
Contribution: Section Author – Hydrology and Floodplains, Water Quality

John Durnan – Graphic Artist. Ten years of experience.
Contribution: Graphic Artist

Chris Elliot – Environmental Scientist. B.S. Landscape Architecture, University of California, Davis. Ten years of experience.
Contribution: Senior Peer Review – Visual and Aesthetics

Jim Estep – Senior Wildlife Biologist and Associate Principal. B.S. Wildlife and Fisheries Biology, University of California, Davis. Fifteen years of experience.
Contribution: Senior Peer Review – Wildlife, Threatened and Endangered Species

Shannon Hatcher – Air Quality and Noise Specialist. B.S. Environmental Science and Environmental Health and Safety, Oregon State University, Corvallis. Four years of experience.
Contribution: Section Author – Noise, Air Quality

Will Kohn – Wildlife Biologist. B.S. Zoology, Humboldt State University, Arcata. Five years of experience.
Contribution: Section Author – Wildlife, Threatened and Endangered Species

Terry Rivasplata, AICP – Senior Planner. B.S. Environmental Planning, University of California, Davis. Twenty-five years of experience.
Contribution: Senior Peer Review – Community Impacts, Growth, Utilities and Emergency Services; CEQA Adequacy Review

Gabriel Roark – Archaeologist. B.A. Anthropology, California State University, Sacramento. Six years of experience.
Contribution: Section Author – Cultural Resources

Diane Rose – Graphic Artist. B.A. Graphic Design. Five years of experience.
Contribution: Graphic Design

Ryman Simangan – Air Quality and Noise Specialist. B.A. Environmental Studies (Minor in Biology), California State University, Sacramento. Two years of experience.
Contribution: Section Author – Noise

Chris Small – Senior Technical Editor. B.A. Economics, B.A. English, University of California, Davis. Five years of experience.
Contribution: Technical Editor

Michael Stevenson – Watershed Scientist. M.S. Yale University, School of Forestry and Environmental Studies (emphasis on Watershed Management and Restoration); B.A. University of California, Santa Cruz, Environmental Studies. Six years of experience.
Contribution: Senior Peer Review – Hydrology and Water Quality

Tim Rimpo – Project Director/Senior Air Quality Specialist. M.S. Colorado State University, Fort Collins, Economics (Natural Resources and Environmental Specialization); B.A. University of Virginia, Charlottesville, Economics. Twenty-one years of experience.
Contribution: Senior Peer Review – Air Quality

Lynn Wall – Environmental Engineer. B.S. Environmental Engineering, Montana Tech, University of Montana, Butte. Nine years of experience.
Contribution: Senior Peer Review – Air Quality

Lisa Webber – Wetland Ecologist. M.S. Botany, University of Massachusetts, Amherst; B.A. Biology, University of California, Santa Cruz. Thirteen years of experience.
Contribution: Section Author – Wetlands and Other Waters of the United States, Vegetation

Sally Zeff, AICP – Senior Planner. Master of Urban Planning, Urban Planning, of Michigan; B.A. Medieval Studies; Reed College; Portland. Twenty-three years of experience.
Contribution: Senior Peer Review – Farmlands and Agriculture, Land Use

8.1.3 Mark Thomas & Company

Tim Fleming – Project Manager. B.S. Civil Engineering, University of the Pacific. M.S. Civil Engineering, Stanford University. California Registered Professional Engineer. Twenty-two years of experience in design of transportation facilities, including arterial roadways and interchanges.

Kim Erickson – Project Manager. B.S. Environmental Planning and Management, University of California, Davis. Over twenty years of experience in preparing environmental documents to comply with CEQA and NEPA, including experience preparing Section 4(f) Evaluations and NEPA/404 Integration Process documents.

Andrew T. Lee – Project Engineer. B.S. Civil Engineering, University of California, Davis. California Registered Professional Engineer. Eight years of experience in design of transportation facilities.

8.1.4 Fehr & Peers

Dave Robinson – Project Manager. B.S. Civil Engineering, California State University, Sacramento. Over eleven years of experience in travel demand forecasting and the analysis transportation facilities.
Contribution: Section Author – Transportation/Traffic

8.2 List of Reviewers

8.2.1 California Department of Transportation

Patrick McAchren – Associate Environmental Planner. B.A. Geography, California State College Chico, Chico. M.S. Environmental Studies/Public Administration, California State University, Sacramento. Thirty-one years of experience reviewing and preparing environmental documents, public policy review and creation, and land use planning.

Alicia Beyer – Hazardous Waste Coordinator. B.S. Civil Engineering, Chihuahua State University, Mexico. M.S. University of Texas at El Paso, UTEP. Thirteen years of experience in hazardous waste studies. Twelve years of experience in urban development and construction.

Steve Hetland, P.E., T.E. – Project Manager, Office of Special-Funded Projects. M.S. and B.A. Civil Engineering, California State University, Sacramento. Over twenty years of experience in engineering design and project management of civil engineering projects, including preliminary engineering for CEQA and NEPA environmental documents.

Amy Kennedy – Natural Environmental Planner. B.A. Natural Sciences, Humboldt State University, Arcata. Five years of experience with Caltrans on endangered species and sensitive resource issues.

Benjamin Tam – Transportation Engineer. B.S. Civil Engineering, San Jose State University. Fifteen years of Caltrans experience, seven years of noise experience.

Sharon Tang – Air/Noise Specialist. A.A. Sacramento City College, Sacramento. Four years of experience preparing and reviewing Air/Noise Studies for environmental documents.

Erick Wulf – Associate Environmental Planner, Archaeology. M.A. and B.A. Anthropology, California State University, Sacramento. Fifteen years of experience in California archeology.

8.2.2 Federal Highway Administration

Leland Dong – Senior Transportation Engineer. B.A. Long Beach State, Long Beach. Twenty years of experience in preparing, reviewing, and approving environmental documents, including Section 4(f) evaluations.

Chapter 9 Distribution List

The following entities or individuals will receive a copy of this report or a notice of availability of this report:

9.1 Environmental Document Mailing List

Copies of the draft EIS/EIR will be submitted to the following organizations and individuals:

9.1.1 Federal Agencies

National Oceanic and Atmospheric Administration Fisheries Service
(formerly National Marine Fisheries Service), Chief Protected Resources Division
U.S. Army Corps of Engineers Sacramento District, Mike Finan
U.S. Environmental Protection Agency Region IX, Nancy Levin
U.S. Fish and Wildlife Service, Attn: Kelly Fitzgerald

9.1.2 State Agencies

Governor's Office of Planning and Research, State Clearinghouse, Terry Roberts
Caltrans, District 3
Caltrans, Planning
California Highway Patrol
Department of Conservation
Department of Fish and Game, Region 2, Dale Watkins
Department of Parks and Recreation
Department of Water Resources
Native American Heritage Commission
Office of Historic Preservation
Public Utilities Commission
Reclamation Board
Regional Water Quality Control Board, Central Valley Region
Resources Agency
State Lands Commission, Lorna Burks
State Water Resources Control Board Division of Water Quality

9.1.3 Local Public Agencies

City of Sacramento City Council, Bonnie Pannell
City of Sacramento City Council, Robbie Waters
City of Sacramento, Department of Transportation, Saed Hasan
City of Sacramento, Development Services Department, Grace Hovey
City of Sacramento, Neighborhood Resource Coordinator, Doug Houston
City of Sacramento, Utilities Department
County of Sacramento Board of Supervisors, Don Nottoli

County of Sacramento Board of Supervisors, Illa Collin
County of Sacramento Public Works Agency

9.1.4 Regional Public Agencies

Sacramento Area Council of Governments
Sacramento Metropolitan Air Quality Management District, Bruce Nixon
Sacramento Public Library
Sacramento Regional County Sanitation District, Joel Nonnweiler
Sacramento Regional County Sanitation District Bufferlands, Bryan Young
Sacramento Regional Transit District, Dave Melko
Sacramento Area Flood Control Agency, Grant Kreinberg

9.1.5 Organizations and Groups

Fehr & Peers, Dave Robinson
Freeport Boulevard Improvement Committee, Kendra Finley
Freeport Properties
Freeport Ventures, LLC
KB International, Kay Backer
Meadowview Development Committee, Leslie Palmer
Meadowview Neighborhood Association, Steve Benson
Stephens Family Irrevocable Trust
Stone Properties and Investments, Bill Stone
Union Pacific Railroad
Valley Center Neighborhood Association, Vickey Scott
Wood Park Neighborhood Association, Carmella Bravo

9.2 Notice of Availability of Environmental Document Mailing List

Copies of a Notice of Availability of the draft EIR/EIS will be mailed to the following agencies, individuals and groups. In addition, individuals, homes and businesses located in the area between Meadowview Road on the north, Laguna Boulevard on the south, the Sacramento River on the west and South Watt Avenue on the east will be sent a mailer notifying them of the availability of the environmental document. It is estimated that this mailing area includes:

- Total homes: 13,489
- Total apartments: 3,706
- Total businesses: 405
- Grand total: 17,600 residents

9.2.1 Federal Agencies

U.S. Army Corps of Engineers, Tom Cavanaugh
U.S. Bureau of Reclamation
U.S. Fish and Wildlife Service, Deborah Meade
U.S. Fish and Wildlife Service Stone Lakes National Wildlife Refuge, Beatrix Treiterer
U.S. Fish and Wildlife Service Stone Lakes National Wildlife Refuge, Tom Harvey

9.2.2 State Agencies

Caltrans North Region Native American Liaison, Kathleen Sartorius
State Lands Commission, Judy Brown

9.2.3 Local and Regional Public Agencies

City of Elk Grove, Bob Lee
City of Elk Grove, Phil Carter
City of West Sacramento, Caroline Quinn
City of West Sacramento, Steve Patek
County of El Dorado, Jim Ware
County of Placer, Ed McCarthy
County of Sacramento Department of Transportation, Matt Darrow
County of Sacramento Department of Environmental Review and Assessment, Bob Caikoski
County of San Joaquin, Tom Flinn
County of Yolo Planning and Public Works Department, Rick Moore
County of Yolo, Clarksburg Advisory Committee
Freeport Regional Water Authority, Tad Berkebile
Sacramento Local Agency Formation Commission
Sacramento Metropolitan Air Quality Management District, David Grouse
Sacramento Regional County Sanitation District, Stan Dean
Sacramento Regional Transit District, Beverly Scott
Sacramento Regional Transit District, Mike Wiley
Sacramento Regional Transit District, John Segerdell
Sacramento Transportation Authority

9.2.4 Organizations and Groups

California Native Plant Society
Deerfield/Mesa Grande Neighborhood Association, Ruby Melton-McCray
Detroit Boulevard Area, Charlotte Coron
East Bay Municipal Utility District, Maria Solis
Environmental Council of Sacramento, David Mogavero
Freeport Boulevard Improvement Committee, Carola Rakela
Freeport Improvement Association
Joe Borges Ranch, Joe Borges
Jones & Stokes, Vicki Axiaq
Lower Northwest Interceptor Design Team, John Buttz
Pacific Gas and Electric Company

Parsons Transportation Group, Dave Mansen
Public Affairs Management, Ben Strumwasser
Public Affairs Management, Marcie Adams
Psomas, Bob Blume
Reclamation District 1000
Sacramento County Water Agency
Sacramento Municipal Utility District, Engineering Department
The Hoyt Company, Kim Pallari
The Hoyt Company, Wendy Hoyt
The Daily Recorder
The Sacramento Bee
Sacramento County Alliance of Neighborhoods, Mary Brill

9.2.5 Individuals

Anderson, Rachel
Anderson, Vicki
Ball Family, Virginia
Bennett, Richard B. and Gayle L.
Blick, Josephine
Carr, Susan
Duarte Allen, E. and Dolores
Finley, Kendra
Fitzgerald, Esther
Garland, Monte and Penny
Gavia, William
Gorman, Talma
Hayes, John and Josey
Hewitt, Helen
Hostert, Debra
Isao
Leavitt, Laura
McChaskey, Byron and Marlene
McGee, Lewis and Lois
Miller, Roxanne
Morabito, Catherine
Moseby, Anthony and Elizabeth
Remme, Janet
Richey, Sarah
Rodriguez, Stanley
Scalora, Marian
Sturge, Richard and Anna Chavez
Thompson, Norris and Alice
Tonkin, Harry
Tursee Morais, John
Watkins, Diane M.
Williams, Natalie

Yo, Edward, George and Loretta Lee
Yomemura, Randy

Chapter 10 References Cited

10.1 Printed References

Bennyhoff, J. A. 1977. Ethnogeography of the Plains Miwok. Center for Archaeological Research at Davis Publication 5. University of California, Davis: Davis, CA.

Benson, P. E. 1989. CALINE4—a dispersion model for predicting air pollution concentrations near roadways. Sacramento, CA: California Department of Transportation.

Blackburn Consulting, Inc. 2001a. Cosumnes River Boulevard Interchange: preliminary geology and geotechnical report. Auburn, CA. Prepared for Mark Thomas & Company, Sacramento, CA.

———. 2001b. Draft initial site assessment report: Cosumnes River Boulevard Interchange, Sacramento County, California. Auburn, CA. Prepared for Mark Thomas & Company, Sacramento, CA.

California Air Resources Board. 2003. Top 4 measurements and days above the standard. Available: http://www.arb.ca.gov/adam/cgi-bin/db2www/adamtop4.d2w/start. Last revised: May 21, 2003. Accessed: September 17, 2003.

California Department of Food and Agriculture. 1997. California agricultural facts and county statistical data. Sacramento, CA.

———. 2000. Pest ratings of noxious weed species and noxious weed seed (list and update). Available: http://pi.cdfa.ca.gov/weedinfo/Index.html. Last revised: February 22, 2001.

California Department of Transportation. 1997. Caltrans environmental handbook, volume 4, community impact assessment. Sacramento, CA: Environmental Program, Cultural Studies Office.

———. 1999. Statewide storm water management plan. National Pollutant Discharge Elimination System storm water permit (Order 99-06-DWQ), adopted July 15, 1999. Available: http://www.swrcb.ca.gov/stormwtr/caltrans.html. Accessed November 17, 2003.

———. 2002. Guidance for the identification, assessment, and treatment of paleontological resources. Sacramento, CA: Division of Environmental Analysis.

———. 2003a. Standard environmental reference: streamlined EIS.EIR outline. Available: http://www.dot.ca.gov/ser/downloads/memos/11-29StreamlinedEISformat.pdf.

———. 2003b. Standard environmental reference: preparing joint CEQA/NEPA documentation. Available: http://www.dot.ca.gov/ser/vol1/sec6/ch37joint/chap37.htm. Last updated: December 4, 2003.

———. 2004. Current STIP project listing as of the October 2003 CTC meeting. Available: http://www.dot.ca.gov/hq/transprog/stip/stip1003.pdf. Accessed: January 2004.

California Department of Water Resources. 2003a. Clean Water Act section 303(d) list and TMDL schedule. Available: http://www.swrcb.ca.gov/tmdl/303d_lists.html. Accessed November 17, 2003.

———.2003b. California's groundwater—bulletin 118, update 2003. Available: http://www.groundwater.water.ca.gov/bulletin118/update2003/index.cfm.

California Division of Land Resource Protection. 2000a. Farmland mapping and monitoring program: important farmland for Sacramento County. Sacramento, CA.

———. 2000b. Sacramento County Williamson Act lands map. Sacramento, CA.

———. 2002. 1998–2000 land use conversion report. Available: http://www.consrv.ca.gov/dlrp/FMMP/pubs/1998_2000/conversion_tables/saccon00.xls Accessed December 3, 2003.

California Division of Mines and Geology. 1997. Guidelines for evaluating and mitigating seismic hazards in California. Special Publication 117. Sacramento, CA.

California Energy Commission. 2000. California energy demand 2000–2010. Staff report – Technical report to California Energy Outlook 2000 Docket #99-CEO-1. Sacramento, CA.

———. 2002a. 2002–2012 electricity outlook report. P700-01-004F. Sacramento, CA.

———. 2002b. California energy facts. Available: http://www.energy.ca.gov/html/calif_energy_facts.html. Accessed: November 21, 2002. Last revised: 2002.

California Exotic Pest Plant Council. 1999. The CalEPPC List: exotic pest plants of greatest ecological concern in California. San Juan Capistrano, CA.

California Natural Diversity Database. 2002. Records search of the U.S. Geological Survey Florin, Sacramento West, Sacramento East, Galt, Bruceville, Courtland, and Elk Grove 7.5-minute quadrangles. Sacramento, CA: California Department of Fish and Game.

California Native Plant Society. 2001. Inventory of rare and endangered plants of California. Sixth edition. Sacramento, CA: Rare Plant Scientific Advisory Committee, David P. Tibor, convening editor.

Central Valley Regional Water Quality Control Board. 1998. The Water quality control plan (basin plan) for the California Regional Water Quality Control Board, Central Valley region. Fourth edition.

City of Elk Grove. 2003. City of Elk Grove general plan background report. September. Elk Grove, CA.

City of Sacramento. 1984. Airport-Meadowview community plan. Adopted April 17, 1984. Sacramento, CA.

———. 1987. Draft environmental impact report for the Sacramento general plan update. Sacramento, CA

———. 1988. City of Sacramento general plan. Originally adopted January 19, 1998. Revisions through December 4, 2000. Sacramento, CA.

———. 1997. City of Sacramento zoning ordinance. Ordinance 2550. Fourth Series. Revised January 1, 1997. Sacramento, CA.

———. 2000. City of Sacramento code, title 15, buildings and construction, chapter 15.88 grading, erosion and sediment control. Effective July 1, 2000. Sacramento, CA.

———. 2002. Solid waste. Available: http://www.pwsacramento.com/solidwaste/index.html. Accessed June 24, 2002. Department of Public Works.

City of Sacramento Department of Utilities Engineering Services Division. 2003. City of Sacramento stormwater quality improvement plan. July. Prepared for the California Regional Water Quality Control Board Central Valley Region. Sacramento, CA.

City of West Sacramento, 1990. City of West Sacramento general plan – policy document and background document. West Sacramento, CA. Adopted 1990. As amended through June 2000.

Civil Solutions. 2002. Preliminary hydrology report and impacts analysis for the proposed Cosumnes River Boulevard extension and interchange. Sacramento, CA.

Competitive Enterprise Institute. 1996. CAFE Standards. Washington, DC.

Environmental Laboratory. 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1. Vicksburg, MS: U.S. Army Corps of Engineers Experiment Station.

Federal Highway Administration. 1983. Visual impact assessment for highway projects. Contract DOT-FH-11-9694. Washington, DC.

Fehr & Peers Associates, Inc. 2005. Final traffic report, Interstate 5/Cosumnes River Boulevard Interchange Project. Roseville, CA.

Fredrickson, D. A. 1973. Early cultures of the North Coast Ranges, California. Unpublished Ph.D. dissertation. Davis, CA: University of California, Davis, Department of Anthropology.

Hart, E. W., and W. A. Bryant. 1997. Fault-rupture hazard zones in California. California Division of Mines and Geology Special Publication 42, 1997 revised edition. Sacramento, CA.

Hickman, J. C. (ed.). 1993. The Jepson manual: higher plants of California. University of California Press. Berkeley, CA.

Hilton, R. P., D. C. Dailey, and H. G. McDonald. 2000. A late Pleistocene biota from the Arco Arena site, Sacramento, California. PaleoBios 20(1). University of California Museum of Paleontology.

Holland, R. 1986. Preliminary description of the terrestrial natural communities of California. Unpublished report. Sacramento, CA: California Department of Fish and Game.

Jones & Stokes. 2003a. *Air quality technical report: Interstate 5/Cosumnes River Boulevard interchange.* EA: 1C5200. December. (J&S 01-120.) Sacramento, CA. Prepared for Mark Thomas & Company, City of Sacramento Department of Public Works, and Office of Environmental Management, California Department of Transportation District 3, Sacramento, CA.

———. 2003b. *Archaeological survey report: Interstate 5/Cosumnes River Boulevard interchange.* EA: 1C5200. December. (J&S 01-120.) Sacramento, CA. Prepared for Mark Thomas & Company, City of Sacramento Department of Public Works, and Office of Environmental Management, California Department of Transportation District 3, Sacramento, CA.

———. 2003c. *Biological assessment: Interstate 5/Cosumnes River Boulevard Interchange Project.* EA: 1C5200. December. (J&S 01-120.) Sacramento, CA. Prepared for Mark Thomas & Company, City of Sacramento Department of Public Works, and Office of Environmental Management, California Department of Transportation District 3, Sacramento, CA.

———. 2003d. *Community impact assessment and relocation impact statement: Interstate 5/Cosumnes River Boulevard Interchange Project.* EA: 1C5200. March. (J&S 01-120.) Sacramento, CA. Prepared for Mark Thomas & Company, City of Sacramento Department of Public Works, and Office of Environmental Management, California Department of Transportation District 3, Sacramento, CA.

———. 2003e. *Extended phase I investigations: Interstate 5/Cosumnes River Boulevard Interchange Project.* EA: 1C5200. December. (J&S 01-120.) Sacramento, CA. Prepared for Mark Thomas & Company, City of Sacramento Department of Public Works, and Office of Environmental Management, California Department of Transportation District 3, Sacramento, CA.

———. 2003f. *Historic property survey report: Interstate 5/Cosumnes River Boulevard Interchange Project.* EA: 1C5200. December. (J&S 01-120.) Sacramento, CA. Prepared for Mark Thomas & Company, City of Sacramento Department of Public Works, and Office of Environmental Management, California Department of Transportation District 3, Sacramento, CA.

———. 2003g. *Natural environment study report: Interstate 5/Cosumnes River Boulevard Interchange Project.* EA: 1C5200. November. (J&S 01-120.) Sacramento, CA. Prepared for

Mark Thomas & Company, City of Sacramento Department of Public Works, and Office of Environmental Management, California Department of Transportation District 3, Sacramento, CA.

———. 2003h. *Noise study report: Interstate 5/Cosumnes River Boulevard Interchange Project.* EA: 1C5200. December. (J&S 01-120.) Sacramento, CA. Prepared for Mark Thomas & Company, City of Sacramento Department of Public Works, and Office of Environmental Management, California Department of Transportation District 3, Sacramento, CA.

———. 2003i. Preliminary delineation of waters of the Unites States, including wetlands: Interstate 5/Cosumnes River Boulevard Interchange Project. (J&S 01-120.) Sacramento, CA. Prepared for City of Sacramento Department of Public Works, CA, and Office of Environmental Management, California Department of Transportation District 3, Sacramento, CA.

———. 2003j. Draft environmental impact report/environmental impact statement for the Freeport Regional Water Project. Sacramento, CA.

Lassen Local Agency Formation Commission. 2003. Information from Lassen LAFCO web site. Available: http://www.cityofsusanville.org/LAFCO/history.html. Accessed: November 3, 2003.

Levy, R. 1978. Eastern Miwok. In California, edited by R. F. Heizer, pp. 398–413. (Handbook of North American Indians, Volume 8, W. C. Sturtevant, general editor.) Smithsonian Institution, Washington, D.C.

Mark Thomas & Company, Inc. 2001. Project study report (project development support): on Interstate 5 in the City of Sacramento, near the Stonecrest Overcrossing between Morrison Creek and Meadowview Road. Sacramento, CA. Prepared for California Department of Transportation, Special Funded Projects, Sacramento, CA.

———. 2002a. Drawings of the Morrison Creek bridge and Cosumnes River Boulevard/Franklin Boulevard intersection: 4 lane divided major expanded intersection, with bike lane, Option 1. March 21, 2002. Sacramento, CA.

———. 2002b. Cosumnes River Boulevard extension and interchange at I-5: first geometric submittal—EA 1C520K. July 15, 2002. File 51005 A (34). Sacramento, CA. Prepared for California Department of Transportation, Special Funded Projects, Sacramento, CA.

Moratto, M. J. 1984. California archaeology. New York, NY: Academic Press.

National Invasive Species Council and Invasive Species Advisory Committee. 2001. Meeting the invasive species challenge: national invasive species management plan. Available: http://www.invasivespecies.gov/council/pfinal.pdf.

Sacramento Area Council of Governments. 2002a. 2003/2005 Sacramento metropolitan transportation improvement plan. July 18, 2002. Sacramento, CA.

———. 2002b. Final draft metropolitan transportation plan for 2025. May 15, 2002. Sacramento, CA.

Sacramento Area Flood Control Agency and Sacramento Regional County Sanitation District. 1995. North Beach Lake and Sacramento Regional Wastewater Treatment Plant levee improvement project final wetland delineation. Sacramento, CA: Environmental Science Associates and Biota Biological Consulting. U.S. Army Corps of Engineers project #199500206.

Sacramento County. 1993. General plan, planning for the 21st century. Originally adopted December 15, 1993. Revisions through May 2, 1997. Sacramento, CA.

———. 2002. Sacramento County 2001 crop and livestock report. Sacramento, CA: Department of Agriculture, Office of the Agricultural Commissioner/Director of Weights and Measures.

County of Sacramento. 1993. Sacramento County General Plan.

———. 1995. Sacramento County Code Chapter 16.44, Land Grading and Erosion Control. Sacramento, CA.

———. 2000. Groundwater Elevation Maps. Sacramento, CA: Water Resources Division.

Sacramento Local Agency Formation Commission. Information from Sacramento LAFCO web site. Available: http://www.saclafco.org. Accessed: November 3, 2003.

Sacramento Metropolitan Air Quality Management District. 2005. Sacramento Regional Nonattainment Area 8-Hour Ozone Rate of Progress Plan Draft Report. September. Sacramento, CA.

Sacramento Regional County Sanitation District. 2000. Final draft: Bufferlands master plan. August. Sacramento, CA.

———. 2003. Environmental impact report for the Interceptor Master Plan and Lower Northwest Interceptor Project. Sacramento, CA. Prepared by Jones & Stokes (J&S 01-351). Sacramento, CA..

Sikes, N. E., and K. J. Tremaine. 2002. Positive archaeotechnical survey report for the I-5/Cosumnes River Boulevard interchange and roadway extension, City of Sacramento, California. Draft. Dixon, CA: Tremaine & Associates, Inc. Prepared for Jones & Stokes, Sacramento, CA.

Smardon, R. C., J. F. Palmer, and J. P. Felleman. 1986. Foundations for visual project analysis. New York, NY: John Wiley & Sons, Inc.

Tremaine, K. 2002. Primary record for Baked Clay Scatter 1. Dixon, CA: Tremaine & Associates, Inc. On file at North Central Information Center, California State University, Sacramento.

Tugel, A. J. 1993. Soil survey of Sacramento County, California. USDA Soil Conservation Service in cooperation with the Regents of the University of California Agricultural Experiment Station. Washington, DC: U.S. Government Printing Office.

U.S. Army Corps of Engineers. 1998. South Sacramento County Streams Investigation, final environmental impact statement/environmental impact report. Sacramento, CA.

———. 2002. Letter to Joel Nonnweiler, Sacramento Regional County Sanitation District, for verification of the Lower Northwest Interceptor Project wetland delineation. June 17, 2002. File #200100495.

U.S. Bureau of the Census. 2000. Information from 2000 U.S. Census Web site: 2000 U.S. Census and 1990 Census of Population and Housing. Available at URL: http://www.census.gov.

U.S. Department of Transportation. 2002a. Docket number NHTSA 11048. Available: http://www.dot.gov/affairs/nhtsa2002.htm. Accessed: June 7, 2002.

———. 2002b. Transportation efficiency act for the 21st century. Available: http://www.fhwa.dot.gov/tea21/h240subb.htm#1203. Accessed: June 2002.

U.S. Environmental Protection Agency. 1993. Guidance specifying management measures for sources of non-point pollution in coastal waters. EPA-840-B-92-002. Washington, DC.

———. 1999. Preliminary data summary of urban storm water best management practices. EPA-821-R-99-012. August 1999. Washington, DC.

———. 2003. Air data. Available: http://www.epa.gov/air/data/reports.html. Last revised: July 2, 2003. Accessed: September 17, 2003.

U.S. Fish and Wildlife Service. 1999. Conservation guidelines for the valley elderberry longhorn beetle. Sacramento, CA.

U.S. Forest Service. 1974. National forest landscape management. Volume 2, Chapter 1: the visual management system. Agriculture Handbook 462. Washington, DC.

U.S. Soil Conservation Service. 1978. Procedure to establish priorities in landscape architecture. Technical Release 65. Washington, DC.

———. 1988. Highly erodible and wetland conservation determination on farm no. 1727, tract nos. 172, 176, 540, 695, 696, 1965, 2708, 2711, and 8125, Sacramento County. Washington, DC.

———. 1993. Soil survey manual. Soil Survey Division. U.S. Department of Agriculture Handbook 18. Washington, DC.

Waechter, S. A. 1993. Addendum to the report on the archaeological survey for the proposed SMUD gas pipeline between Winters and Sacramento, Yolo and Sacramento counties, California. Davis, CA: Far Western Anthropological Research Group. Prepared for Woodward-Clyde Consultants, Oakland, CA. On file at Northwest Information Center, Sonoma State University, Rohnert Park, CA (S-15334).

Washington State Department of Transportation. 1996. Roadside classification plan. Olympia, WA.

———. 2001. Environmental procedures manual M 21-11, visual impacts, light and glare. Olympia, WA.

Water Forum. 1999. Water Forum Proposal environmental impact report. Sacramento, CA.

Western Regional Climate Center. 1973. Western U.S. precipitation frequency maps. Available: http://www.wrcc.dri.edu/pcpnfreq.html. Accessed: November 17, 2003.

Wilson, N. L., and A. H. Towne. 1978. Nisenan. In California, edited by R. F. Heizer, pp. 387–397. (Handbook of North American Indians, Volume 8, W. C. Sturtevant, general editor.) Smithsonian Institution, Washington, DC.

10.2 Personal Communications

Artho, Dan. U.S. Army Corps of Engineers. January 31 and March 1, 2002—telephone conversations with Lisa Webber, Jones & Stokes.

Finan, Mike. U.S. Army Corps of Engineers. February 20, 2002—meeting with Lisa Webber, Jones & Stokes.

Fullen, Karen. Biologist, U.S. Natural Resources Conservation Service. January 30, 2002—meeting with Lisa Webber, Jones & Stokes.

Haley, Nancy. Chief, San Joaquin Valley Office, U.S. Army Corps of Engineers, Sacramento, CA. April 8, 2002—telephone conversation with Sam Garcia, Jones & Stokes.

Kennedy, Amy. Biologist, California Department of Transportation. January 10, 2002—meeting with Will Kohn, Lisa Webber, and Patrick Stone, Jones & Stokes.

Kreinberg, Grant A. Water resource consultant, Sacramento Area Flood Control Agency, Sacramento, CA. January–December 2003—meetings with project development team.

Lockhart, Don. Associate planner, City of Sacramento Planning and Building Department, Long-Range Division, Sacramento, CA. January 15, 2002—telephone conversation with Vicki Axiaq, Jones & Stokes.

Mansen, Dave. Engineer. Parsons, San Francisco, CA. December 4, 2003 - telephone conversation with David Buehler of Jones & Stokes.

Nyvall, Vince. Senior agricultural and standards inspector, Sacramento County Agricultural Commissioner, Weights and Measures Office. January 22, 2002—personal communication to Lisa Webber, Jones & Stokes.

Paxton, Terry. Supervising Engineer. City of Sacramento, Department of Utilities. May 19, 2004—personal communication (email) to Grace Hovey, City of Sacramento.

Plummer, Thomas S., P.E. Civil Solutions Engineering, Inc., Sacramento, CA. March 3, 2005—memorandum to Tim Fleming, Mark Thomas & Company.

Pskowski, Dan. City of Sacramento Department of Tree Services. May 3, 2002—personal communication with Lisa Webber, Jones & Stokes.

Smith, Donald C. Senior administrative analyst, Sacramento Regional Transit District, Sacramento, CA. January–December 2003—meetings with project development team.

Smith, James. Manager of industry and public projects, Union Pacific Railroad. January 5, 2004—electronic mail to Dave Buehler, Jones & Stokes.

Young, Brian, Natural resources manager, Sacramento Regional County Sanitation District Bufferlands, Sacramento, CA. February 15, 2002—personal communication to Will Kohn, Jones & Stokes. August 29, 2003—telephone conversation. January–December 2003—meetings with project development team.

Appendix A CEQA Checklist

INTERSTATE 5/COSUMNES RIVER BOULEVARD INTERCHANGE PROJECT

INITIAL STUDY

This Initial Study has been prepared by the City of Sacramento Department of Public Works, pursuant to the California Environmental Quality Act (CEQA) (Pub. Res. Code Section 21000 et seq.) and the State CEQA Guidelines (14 California Code of Regulations [CCR] 15000 et seq.). This document has been prepared by the City as the CEQA Lead Agency (Pub. Res. Code Section 21067 and Guidelines Sections 15051 and 15367) for the purpose of constructing the Interstate 5(I-5)/Cosumnes River Boulevard Interchange project in the City of Sacramento.

The California Department of Transportation (Caltrans) and Federal Highway Administration (FHWA) will be working with the City of Sacramento on this project. FHWA has determined that an environmental impact statement (EIS) is required to comply with the National Environmental Policy Act (NEPA) and will be issuing a Notice of Intent to prepare an EIS. The City of Sacramento, Caltrans, and FHWA will work together to prepare a combined NEPA/CEQA document for the project.

ORGANIZATION OF THIS INITIAL STUDY

This Initial Study is organized into the following sections:

SECTION I - BACKGROUND: Provides summary background information about the project name, location, sponsor, and when the Initial Study was completed.

SECTION II - PROJECT DESCRIPTION: Includes a detailed description of the Proposed Project.

SECTION III - ENVIRONMENTAL CHECKLIST AND DISCUSSION: Contains the Environmental Checklist form together with a discussion of the checklist questions. The Checklist Form is used to determine the following for the proposed project: 1) "Potentially Significant Impacts," which identifies impacts that may not be mitigated with the inclusion of mitigation measures, 2) "Potentially Significant Impacts Unless Mitigated," which identifies impacts that could be mitigated with incorporation of mitigation measures, 3) "Less Than Significant Impacts," which identifies impacts that would be less than significant and do not require the implementation of mitigation measures, and 4) "No Impact," identifying areas in which the project would have no effect.

SECTION IV - ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED: Identifies which environmental factors were determined to have either a "Potentially Significant Impact" or "Potentially Significant Impact Unless Mitigated," as indicated in the Environmental Checklist.

SECTION V - REFERENCES

SECTION VI - LIST OF PREPARERS

SECTION I - BACKGROUND

1. File Number, Project Name:

   Interstate 5/Cosumnes River Boulevard Interchange Project

2. Project Location:

   Cosumnes River Boulevard is a major east-west arterial roadway in the City of Sacramento. A portion of this roadway is already constructed, extending from Franklin Boulevard to State Route (SR) 99, where the roadway becomes Calvine Road within unincorporated Sacramento County. Calvine Road is a major arterial, extending to Grant Line Road and servicing major growth areas in south Sacramento County. The City of Sacramento General Plan includes extension of Cosumnes River Boulevard westerly of Franklin Boulevard, with an interchange at I-5. Cosumnes River Boulevard could also extend west to an at-grade intersection with Freeport Boulevard. The proposed interchange also will facilitate development of land currently in agricultural production on both sides of I-5 in the project area.

3. Project Sponsor and Contact Persons:

   City of Sacramento Department of Public Works
   Saed Hasan, Supervising Engineer
   927 10th Street, Room 100
   Sacramento, CA 95814
   (916) 808-8300

   City of Sacramento Planning and Building Department
   Grace Hovey, Associate Planner
   Planning Division
   1231 I Street, Room 300
   Sacramento, CA 95814
   (916) 808-7601

   California Department of Transportation
   Japtej Gill, Branch Chief
   Sacramento Office of Environmental Management
   North Region
   1304 O Street
   Sacramento, CA 95814
   (916) 323-3898

4. Date Initial Study Completed:

   January 28, 2002

INTRODUCTION

FHWA, Caltrans, and the City of Sacramento are preparing an EIS/EIR to analyze the effect of constructing the I-5/Cosumnes River Boulevard interchange located in the southwest portion of the city. The following Initial Study has been prepared in accordance with CEQA (Public Resources Code Sections 1500 et seq.).

The City of Sacramento is soliciting views of interested persons and agencies on the content of the environmental information presented in this document. Due to the time limits mandated by state law, your response must be sent at the earliest possible date, but no later than 30 days after receipt of this Initial Study. Please send written responses to:

City of Sacramento Planning and Building Department
Grace Hovey, Associate Planner
Planning Division
1231 I Street, Room 300
Sacramento, CA 95814
(916) 264-7601
Fax: 916/264-7185

California Department of Transportation
Japtej Gill, Branch Chief
Sacramento Office of Environmental Management
North Region
1304 O Street
Sacramento, CA 95814
(916) 323-3898

SECTION II - PROJECT DESCRIPTION

The City of Sacramento is proposing to construct the I-5/Cosumnes River Boulevard interchange, which entails extending Cosumnes River Boulevard from its current westerly terminus at Franklin Boulevard to I-5 and possibly to Freeport Boulevard. Figure 1 places the project within the Sacramento County vicinity, and Figure 2 shows the project location within the southwest portion of the city. (All figures are located at the end of this document.)

Cosumnes River Boulevard is a major east-west arterial roadway in the City of Sacramento. A portion of this roadway is already constructed, extending from Franklin Boulevard to SR 99, where the roadway becomes Calvine Road within unincorporated Sacramento County. Calvine Road is a major arterial, extending to Grant Line Road and servicing major growth areas in south Sacramento County. The City of Sacramento General Plan includes extension of Cosumnes River Boulevard westerly of Franklin Boulevard, with an interchange at I-5. Cosumnes River Boulevard could also extend west to an at-grade intersection with Freeport Boulevard. The proposed interchange will facilitate development of land currently in agricultural production on both sides of I-5 in the project area and slated for development in the City of Sacramento General Plan. The study area for the proposed project is shown in Figures 2 and 3.

Major landowners in the study area include Sacramento Regional County Sanitation District (SRCSD), California Department of Transportation (Caltrans), Delta Shores, Stone Family Trust, and Union Pacific Railroad (UPRR), as shown in Table 1.

Table 1. Land Ownership in the Study Area: I-5/Cosumnes River Boulevard Interchange Project

Owner	Area	
	Hectares	(Acres)
Sacramento Regional County Sanitation District	134.7	(332.9)
Delta Shores	322.1	(796.0)
Stone Family Trust	51.6	(127.5)
California Department of Transportation	15.3	(37.9)
Union Pacific Railroad	4.1	(10.2)
Total	**527.8**	**(1,304.5)**

Primarily urban land uses border the study area, including residential, commercial, industrial, park/open space, and public/institutional lands. The existing land uses are residential development and the Sacramento River and levee system on the west, the Sacramento Regional County Sanitation District (SRCSD) property and Bartley Cavanaugh golf course on the south, and Union House Creek, the Sacramento Job Corps property, and residential development on the north and east.

The study area is within the southern portion of the City's Airport-Meadowview community plan area. This plan area is made up primarily of single-family residential development, with limited commercial development along Freeport Boulevard in the study area. The portion of this plan area within the project study area is currently largely undeveloped.

Land uses within the study area consist primarily of agricultural lands. Morrison Creek, Union House Creek, and several agricultural canals traverse portions of the study area. The Union Pacific Railroad (UPRR) crosses the study area from north to south. A portion of the study area is within the SRCSD bufferlands, which are open space lands surrounding the Sacramento Regional Wastewater Treatment Plant. The approximately 2,500-acre SRCSD bufferlands were acquired in the 1970s by the SRCSD to provide a buffer between the newly constructed plant and the neighboring community and to provide an area for future expansion of the plant.

City of Sacramento General Plan land use designations in the study area are as follows (see Figure 4 for a map of City general plan land use designations in the study area):

- Regional Commercial & Offices
- Community/Neighborhood Commercial & Offices
- Industrial-Employee Intensive
- Mixed-Use
- Low Density Residential
- Parks-Recreation-Open Space
- Public/Quasi-Public-Miscellaneous
- Agriculture

The study area is zoned as follows (see Figure 5 for a map of City zoning for the study area):

- R-1, Standard Single Family Zone (low density residential)
- R-1A, Single Family Alternative Zone (low to medium density residential)
- R-2A, Multi-Family Zone (multi-family residential)
- MRD, Manufacturing, Research, and Development Zone (high-quality manufacturing, assembly, research and development)
- A, Agricultural Zone (agriculture/farming and open space)
- PUD, Planned Unit Development (integrated development)

NEED AND PURPOSE

The project is needed because the existing east-west arterial roadways within the southern portion of the City are insufficient to alleviate future congestion and meet traffic demand. Traffic volumes forecasted for Year 2025 will outstrip the ability of east-west roadways to accommodate travel between I-5 and SR 99 in the project area. The closest east-west connector between I-5 and SR 99 to the north is the Meadowview Road/Mack Road corridor. The Pocket Road/Meadowview interchange with I-5 is located at kilometer post 26.0 (postmile 16.2), a distance of 2.0 kilometers (1.2 miles) from the proposed Cosumnes River Boulevard interchange located at approximately kilometer post 24.0 (postmile 14.9). The closest east-west connector between I-5 and SR 99 to the south is Laguna Boulevard. The Laguna Boulevard interchange with I-5 is located at kilometer post 19.4 (postmile 12), a distance of 4.6 kilometers (2.9 miles) from the proposed interchange.

Average daily traffic volumes on the Meadowview/Mack Road corridor are expected to increase by 50% by Year 2525, which would result in level of service (LOS) of "F" on several key segments, indicating severe congestion. The proposed project would provide relief for the Meadowview/Mack Road corridor, reducing traffic by 20% or more, and improving LOS (reducing vehicle delays) by at least one level. Traffic on Laguna Boulevard would also be improved by approximately 8%, with a decrease of about 3,000 vehicle per day.

Additionally, several schools and medical and hospital facilities are located near SR 99, between Mack Road and Cosumnes River Boulevard. These include Cosumnes River College, Kaiser Permanente Medical Center South, and Methodist Hospital. The project would result in improved medical and emergency vehicle response times, particularly during peak periods.

The primary purpose of the project is to provide an east-west connector between I-5 and SR 99, which would improve mobility within the southerly limits of the study area and alleviate future congestion on east-west arterial roadways within the southern portion of the City. The secondary purpose of the Cosumnes River Boulevard project is to provide access to developable land on both sides of I-5 in accordance with the City of Sacramento General Plan.

Planning Background

Construction of the I-5/Cosumnes River Boulevard interchange was originally proposed in the early 1960s and has been a planned improvement for almost 40 years; however, financial constraints prohibited construction. The City of Sacramento General Plan includes extension of Cosumnes River Boulevard westerly of Franklin Boulevard, with an interchange at I-5. Cosumnes River Boulevard could also extend west to an at-grade intersection with Freeport Boulevard near the Sacramento River. (Mark Thomas & Co. 2001.)

The proposed project is included in the City General Plan and Metropolitan Transportation Plan (MTP). Design of the project is included in the Metropolitan Transportation Improvement Plan (MTIP) and State Transportation Improvement Plan (STIP).

Existing Transportation Facilities

Significant north-south interregional facilities include I-5 and SR 99. Construction of the roadway and interchange would provide better access between these two facilities. I-5 is a four-lane freeway from Elk Grove Boulevard interchange and then becomes a six-lane freeway to the South Land Park overcrossing. Cosumnes River Boulevard is a major east-west arterial roadway in the City. A portion of this roadway is already constructed, extending from Franklin Boulevard to SR 99, where the roadway becomes Calvine Road within unincorporated Sacramento County. Calvine Road is a major arterial, extending to Grant Line Road and servicing major growth areas in south Sacramento County. Florin Road and Meadowview Road are the major east-west corridors in the Airport-Meadowview community plan area and connect to both I-5 and SR 99. Freeport Boulevard and 24th Street (which presently terminates just north of the study area) are the major north-south corridors within the southern portion of the City. Existing major roadways are shown on Figures 1 and 2.

Future Travel Demand

According to the Caltrans' report entitled "Interstate 5 Transportation Concept Report–1996 to 2016," dated April 1997, the portion of I-5 within the study area was operating at level of service C, and traffic volume was projected to increase by 73% by 2016.

Traffic Forecasts

Traffic conditions under existing conditions and forecasts for horizon Year 2005 and Year 2025 conditions were made by Fehr & Peers Associates in November 2001 based on the Sacramento Area Council of Governments (SACOG) regional travel forecasting model (Mark Thomas & Co. 2001).

Table 2 illustrates the existing daily traffic volume forecasts on roadways within the project area. As shown, existing conditions in 2001 result in level of service (LOS) C or better on all the existing roadways.

Table 2. Cosumnes River Boulevard Interchange – Daily Traffic Volumes: Year 2001 (Existing Without Project Conditions)

Roadway	Segment	Lanes	Daily Volume	LOS
Meadowview Road	I-5 to Freeport Boulevard	4	29,100	B
	Freeport Boulevard to 24th Street	4	25,300	B
	24th Street to Mack Road	4	29,600	C
Mack Road	Meadowview Road to Franklin Boulevard	4	32,600	C
	Franklin Boulevard to Center Parkway	4	27,000	B
Cosumnes River Boulevard	SR 99 to Bruceville Road	6	37,400	B
	Bruceville Road to Franklin Boulevard	2	12,000	B
	Franklin Boulevard to I-5 (Extension)	--	0	--

Table 3 illustrates the forecast of Year 2005 and Year 2025 traffic volumes (average daily traffic) for roadways within the project study area. The purpose of this table is to facilitate comparison of the anticipated changes in traffic volumes and LOS that could occur in 20 years. As shown, average daily traffic without the proposed project would result in LOS D and E on Meadowview and Mack Road in 2005 and LOS F in 2025.

Table 3. Cosumnes River Boulevard Interchange – Daily Traffic Volumes and LOS Forecasts: Year 2005 and Year 2025 (Future Without Project Conditions)

		Year 2005			Year 2025		
Roadway	Segment	Lanes	Daily Volume	LOS	Lanes	Daily Volume	LOS
Meadowview Road	I-5 to Freeport	4	29,100	D	4	24,500	B
	Freeport to 24th Street	4	25,300	C	4	29,000	D
	24th Street to Mack Road	4	29,600	D	4	43,600	F
Mack Road	Meadowview Road to Franklin Boulevard	4	32,600	E	4	39,400	F
	Franklin Boulevard to Center Parkway	4	27,000	C	4	32,800	E
Cosumnes River Boulevard	SR 99 to Bruceville Road	6	37,400	B	6	54,300	F
	Bruceville Road to Franklin Boulevard	2	12,000	B	4	19,300	A
	Franklin Boulevard to I-5 (Extension)	2	0	-	4	0	-

Table 4 shows the forecasted average daily traffic for the With Project and Without Project Conditions for Year 2025 traffic forecasts. The purpose of this table is to facilitate comparison of the anticipated changes in traffic volumes and LOS that could occur in 20 years with and without the project. As shown, the With Project Conditions would improve the LOS along all segments of Meadowview Road and Mack Road.

Table 4. Cosumnes River Boulevard Interchange – Daily Traffic Volumes and LOS Forecasts: Year 2025 (Future Without and With Project Conditions)

		Without Project No Improvements			With Project With Improvements		
Roadway	Segment	Lanes	Daily Volume	LOS	Lanes	Daily Volume	LOS
Meadowview Road	I-5 to Freeport	4	24,500	B	4	21,600	A
	Freeport to 24th Street	4	29,000	D	4	25,000	B
	24th Street to Mack Road	4	43,600	F	4	35,000	E
Mack Road	Meadowview Road to Franklin Boulevard	4	39,400	F	4	31,000	D
	Franklin Boulevard to Center Parkway	4	32,700	E	4	31,000	D
Cosumnes River Boulevard	SR 99 to Bruceville Road	6	54,300	F	6	58,700	F
	Bruceville Road to Franklin Boulevard	4	19,300	A	4	28,500	C
	Franklin Boulevard to I-5 (Extension)	4	0	-	4-6	25,200	B

Economic Development

The project would extend Cosumnes River Boulevard from its current westerly terminus at Franklin Boulevard to I-5 and possibly west across I-5 toward the Sacramento River to Freeport Boulevard with an interchange at I-5. Construction of the project would facilitate development of approximately 700-800 acres land that is currently in agricultural use located between the railroad tracks and the unincorporated community of Freeport. This land has been identified by the City of Sacramento in its adopted general plan as a future growth area to provide residential, commercial, and economic development in the southwest area of the city. The proposed project

would facilitate development of this area. The community of Freeport is within the City's sphere of influence. Seventy-five percent of the registered voters in the community recently signed a petition supporting a proposal to annex the community of Freeport to the City of Sacramento. The annexation process is underway and is anticipated to be complete in 2002. (Lockhart pers. comm.)

RANGE OF ALTERNATIVES

Alternatives Selected for Detailed Study in the EIS/EIR

Two build alternatives have been identified that meet the location study requirements and the project purpose and need:

- **Alternative 1. No Project/No Action:** No roadway improvements would be constructed or proposed under the No-Project/No-Action Alternative.

- **Alternative 2. Construct Cosumnes River Boulevard from Franklin Boulevard West to I-5 with an Interchange at I-5:** Alternative 2 is to construct Cosumnes River Boulevard from Franklin Boulevard west to I-5 with an interchange at I-5. Two alternate alignments are proposed for the Cosumnes River Boulevard connection between Franklin Boulevard and the proposed I-5 interchange. (See Figure 2.)

  - Sub-Alternative A. North Alignment: The north alignment begins just west of the Morrison Creek Bridge and travels north and then west, abutting the Stone Family Trust and Delta Shores parcels until the proposed interchange with I-5.

  - Sub-Alternative B. South Alignment: The south alignment begins just west of Morrison Creek and travels west through the Bufferlands adjacent to Morrison Creek, entering the southern portion of the Delta Shores parcel and traveling northwest to the proposed I-5 interchange location.

- **Alternative 3. Construct Cosumnes River Boulevard from Franklin Boulevard West across I-5 toward the Sacramento River to Freeport Boulevard with an Interchange at I-5:** Alternative 3 is to construct Cosumnes River Boulevard from Franklin Boulevard west across I-5 toward the Sacramento River to Freeport Boulevard with an interchange at I-5. This alternative is identical to Alternative 2, except that no connection to Freeport Boulevard is proposed. (See Figure 2.)

  - Sub-Alternative A. North Alignment: Same as described above.

  - Sub-Alternative A. South Alignment: Same as described above.

Screening Criteria for Alternative Selection

The City and Caltrans have identified the following screening criteria to evaluate the build project alternatives and to select the least environmentally damaging practicable alternative. Practicable alternatives must:

- Meet the basic project purpose and need.
- Be capable of implementation after taking into consideration cost, existing technology, and logistics in light of overall project purposes.
- Be consistent with the Metropolitan Transportation Plan.
- Meet federal transportation air quality conformity requirements.
- Avoid and minimize impacts on wetlands and other regulated waters of the United States to the maximum extent practicable.
- Avoid and minimize impacts on listed species and other sensitive biological resources, including habitats, to the maximum extent practicable.
- Avoid and minimize impacts on Known Native American sites that are determined to be eligible for listing in the California Register of Historical Resources on the National Register of Historic Places
- Avoid and minimize impacts on the 100-year floodplain.
- Minimize purchase of new right-of-way and displacement of existing residences and businesses.
- Provide improved east-west mobility within the southerly limits of the City of Sacramento, including access to I-5.
- Provide possible economic development opportunities within the project area.
- Serve the existing, planned, and anticipated growth of population in the southern portion of the City of Sacramento and Sacramento County.

Alternatives Considered and Eliminated

Existing physical constraints in the study area include the Beach Lake/Morrison Creek floodplain, an existing GTE Data Services building, and the Bartley Cavanaugh public golf course. Any new interchange would also be required to satisfy Caltrans' requirements stated in a publication entitled "Design Information Bulletin Number 77," which states that the minimum spacing between interchanges shall be 1.5 kilometers (km) in urban areas, such as in the study area. The spacing between the two adjacent interchanges, Laguna Boulevard to the south and Pocket Road/Meadowview Road to the north, is 6.6 km (4.1 miles). The interchange location is therefore constrained to between kilometer post (KP) 20.9 and KP 24.5 (postmile [PM] 14.4 to PM 15) between the north edge of the golf course and the GTE Data Services complex.

Initially, three build alternatives were identified that avoided the above-mentioned constraints, representing differing connection points to I-5. Two of these alternatives were eliminated because they did not meet the requirements identified in earlier location studies conducted by Caltrans and the City. These alternatives would have affected existing development along both sides of Freeport Boulevard, or would have created small, isolated parcels on existing developable land.

The only feasible interchange location was determined to be at the Riverbend overcrossing at Stonecrest Avenue; the site was evaluated by Caltrans and the City in earlier location studies and adopted by the Sacramento City Council on November 4, 1981, with a Freeway Agreement.

DESIGN CRITERIA

The current design criteria for the interchange and roadway are as follows:

- **Interchange configuration:** The relatively high-volume facility would most likely be configured as a modified partial cloverleaf with diagonal off-ramps in the northbound and southbound directions, northbound and southbound diagonal on-ramps, and a southbound loop on-ramp from eastbound Cosumnes River Boulevard. The proposed configuration could accommodate a northbound loop on-ramp from eastbound Stonecrest Avenue/Cosumnes River Boulevard, if warranted by future traffic volumes.

- **Roadway width:** Based on preliminary traffic information, it appears that Cosumnes River Boulevard will be four lanes from Franklin Boulevard to 24th Street, increasing to six lanes west to I-5.

- **Phasing:** The project may or may not be phased. It would be possible to phase construction of the interchange as well as phase construction of Cosumnes River Boulevard.

- **Union Pacific Railroad Crossing:** A grade separation/overhead structure would be required for the crossing of the UPRR. The alignment and profile should be planned to accommodate the future extension of light rail.

- **Morrison Creek Bridge:** Due to the sensitive environmental features associated with the creek, alternative spans and bridge types will be reviewed for their benefits and technical feasibility in reducing impacts. The Morrison Creek crossing and UPRR crossing will be evaluated as one structure or two structures.

ADJACENT PROJECTS

There are several adjacent projects in the project area that contribute to environmental impacts. These projects are briefly described below:

- **Sacramento Regional Transit District (RT) South Line Extension** – RT is constructing the first phase of an 11-mile extension from downtown Sacramento to the City of Elk Grove. The first phase is a 6.3-mile light rail system extension to Meadowview Road. This project includes seven new stations and 26 light rail vehicles. This extension will operate primarily in a 40-foot-wide right-of-way on the western portion of the UPRR corridor. The cost of this project is budgeted at $200 million. The EIR was certified by RT in 1997 and the Federal Transit Administration (FTA) approved the EIS and issued a Record of Decision (ROD) in

1997. Construction on the first phase commenced in 2000 and is scheduled to be completed in September 2003.

RT recently initiated the environmental review and preliminary engineering phase for the second phase of the project. Work is anticipated to take 18 months and be completed by April 2003. This second phase of the project will extend light rail from Meadowview Road to the vicinity of Calvine/Auberry Roads. A segment is within the limits of the I-5/Cosumnes River Boulevard Interchange project. Beginning at the existing terminus station for the Phase 1 light rail extension at Meadowview Road (now under construction), this segment will continue south along the west side of the UPRR tracks. Near Morrison Creek, the light rail alignment will use an aerial structure over a relocated UPRR mainline track to transition from the west side to the east side of the rail right-of-way. Reversing 2,500-foot radius horizontal curves will be used for this transition. The elevated structure will be approximately 1,300 feet long and approximately 30 feet high with a maximum grade of 5% and will cross over Morrison Creek. The alignment will then turn east on a 500-foot radius curve and cross over Union House Creek at-grade on a single-span bridge and run along the north side of the planned extension of Cosumnes River Boulevard. At this time, it is assumed that the alignment will be grade separated at Franklin Boulevard. This segment includes one station west of Franklin Boulevard. This station is assumed to have a moderate size park-and-ride lot (about 500 spaces). This station is anticipated to serve a significant number of users from the Laguna/Elk Grove area.

- **Sacramento Regional County Sanitation District (SRCSD) Lower Northwest Interceptor (LNWI) project** – The SRCSD is currently in the preliminary design phase of a 20-mile-long wastewater interceptor that would be constructed between the Natomas area in north Sacramento and the SRCSD wastewater treatment facility just south of the I-5/Cosumnes River Boulevard project site. The current alignment runs through the City of West Sacramento and includes two Sacramento River crossings. The notice of preparation of an EIR was released in 2001, and, if the project is approved, construction would commence in 2003/2004. The state lead agency is SRCSD.

- **County of Sacramento/East Bay Municipal Utilities District (EBMUD) Water Intake and Pipeline project** – The County of Sacramento and EBMUD have agreed to jointly construct and operate a regional project to divert water from the Sacramento River at Freeport. Associated facilities would include water pumping and treatment facilities and transmission pipelines. Currently in the conceptual design phases, the project, if approved, would result in the construction of a major water transmission pipeline that would most likely follow the alignment of Cosumnes River Boulevard. Pipeline alignments and facility sitings will be coordinated, to the extent possible, with other projects in the area, including the I-5/Cosumnes River Boulevard Interchange project.

- **Sacramento Area Flood Control Agency (SAFCA) Morrison Creek Levee Improvement project** – SAFCA is proposing a levee improvement project to reduce potential for flooding in the lower Morrison Creek watershed. This project would include construction of additional levees and/or raising of existing levees on the northern boundary of the SRCSD

wastewater treatment plant. This project may result in the development of a borrow site within the proposed alignment of Cosumnes River Boulevard.

- **Delta Shores project** – Approximately 700-800 acres of mixed use development is planned for currently vacant agricultural land on both sides of I-5. There is no specific development proposal or entitlements at this time. Cosumnes River Boulevard would traverse the Delta Shores parcel and facilitate development of this area.

- **Stone Family Trust project** – Approximately 80 acres of agricultural land are located east of I-5. There is no specific development proposal for this parcel at this time. Construction of Cosumnes River Boulevard would facilitate development of this area.

AREAS OF CONTROVERSY

Although the degree of controversy surrounding a proposed action may not constitute an environmentally significant effect in itself, Council of Environmental Quality (CEQ) NEPA Regulations (Section 1508.27[b][4]) direct federal agencies to consider "the degree to which effects on the quality of the human environment are likely to be highly controversial" when evaluating the intensity of a proposed action's impact. Controversy can relate to local opposition to the action, environmental protect groups' interest in the effects on resources, competing commercial interests, or expert disagreement. In addition, controversy can focus on a federal agency's definition of the environmental baseline, its analysis of impacts and determining significance, or its identification of mitigation measures and alternatives. Likewise, under CEQA, a lead agency must consider public opinion when determining whether an impact is beneficial or adverse and EIRs are required to identify known areas of controversy (Pub Res. Code 2180[c][2], 2180.2[b]; Guidelines sec. 15064[c]).

At this point in the proposed project, no areas of controversy have been identified. Any potential areas of controversy will be identified during the scoping process and addressed in the EIS/EIR.

UNRESOLVED ISSUES WITH OTHER AGENCIES

At this point in the project, there are no known unresolved issues with the alternatives selected for detailed study; however, agency coordination is just beginning. Any potential unresolved issues with other agencies will be identified during the scoping process.

PROPOSED FUNDING

Funding for the interchange and extension has not yet been determined; however, it would probably be funded through $30 million state and federal STIP funds and $4.5 million in local funds (City capital improvement program funds and right of way dedication).

REQUIRED PERMITS AND APPROVALS

At an FHWA coordination meeting held on July 16, 2001, FHWA made the following two requests:

1. The City and Caltrans conduct a detailed alternatives analysis at the beginning of the project to meet the requirements of both NEPA and Section 404 of the Clean Water Act (i.e., the NEPA 404 Memorandum of Understanding [MOU] process).

2. The City and Caltrans prepare a combined EIS/EIR for the project.

In a 1992 MOU, the U.S. Department of Transportation (USDOT), U.S. Department of Army-Civil Works, and the U.S. Environmental Protection Agency (EPA) adopted as agency policy 1) improved interagency coordination and 2) integration of NEPA and the Clean Water Act Section 404 procedures. The NEPA 404 MOU applies to all projects needing both FHWA/FTA action under NEPA and a U.S. Army Corps of Engineers (Corps) individual permit under Section 404 of the Clean Water Act. The MOU is limited to issues pertaining to waters of the United States and associated sensitive species. Although the MOU was recently revised in fall 2000 to pertain to Corps individual permits for project having an impact on 5 or more acres, FHWA specifically requested that the project comply with the NEPA 404 MOU process.

Anticipated permitting, approval, and agency coordination requirements for the proposed project are shown in Table 5.

Table 5. Anticipated Approvals, Permits, and Coordination

Affected Agency	Approval, Permit, or Coordination Required
City of Sacramento (CEQA Lead Agency)	• Certification of EIR for CEQA compliance • Authorization of funding, approval of project from City Council • Encroachment permit from Public Works Department for work within the City right-of-way • Determination of conformity with City General Plan
Caltrans District 3	• Approval of Project Report • Encroachment permit for activities conducted in Caltrans right-of-way
Federal Highway Administration (NEPA Lead Agency)	• Approval of EIS for NEPA compliance • Responsible for consultation with federal agencies
U.S. Environmental Protection Agency	• Consultation under the NEPA Section 404 MOU
State Office of Historic Preservation	• Consultation under Section 106 of the National Historic Preservation Act
U.S. Army Corps of Engineers	• Section 404 permit under the Clean Water Act
U.S. Fish and Wildlife Service	• Section 7 consultation under the federal Endangered Species Act
California Department of Fish and Game	• Streambed Alteration Agreement under Section 1601 of the Fish and Game Code • Section 2081 consultation under the state Endangered Species Act
Reclamation Board	• Encroachment permit for activities conducted within Reclamation's right-of-way
Central Valley Regional Water Quality Control Board	• General construction activity stormwater discharge permit, notice of intent for grading activities exceeding 1 acre
Sacramento Metropolitan Air Quality Management District	• Permit to operate construction equipment
Regional Transit	• Coordination of design issues
Sacramento Regional County Sanitation District	• Coordination of right-of-way and design issues
Sacramento Area Flood Control Agency	• Coordination of design issues

SECTION III - ENVIRONMENTAL CHECKLIST AND DISCUSSION

LAND USE

1. LAND USE	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
Would the proposal:				
A) Result in a substantial alteration of the present or planned use of an area?	X			
B) Affect agricultural resources or operation (e.g., impacts to soils or farmlands, or impact from incompatible land uses?)	X			

Environmental Setting

The study area is located in the southwest portion of the City of Sacramento and is bordered by urban land uses, including residential, commercial, industrial, park/open space, and public/institutional lands. Land uses include residential development and the Sacramento River and levee system on the west, the Sacramento Regional County Sanitation District (SRCSD) bufferlands and Bartley Cavanaugh golf course on the south, and the Sacramento Job Corps property and residential development on the north and east.

The study area is within the southern portion of the City's Airport-Meadowview community plan area. This plan area is made up primarily of single-family residential development, with limited commercial development along Freeport Boulevard in the study area. The portion of this plan area within the project study area is largely undeveloped and consists of developable property. Florin Road and Meadowview Road are the major east-west corridors in the Airport-Meadowview community plan area and connect to both I-5 and SR 99. Freeport Boulevard and 24th Street (which presently terminates just north of the study area) are the major north-south corridors.

Land uses in the study area primarily consist of open space and agricultural uses. Morrison Creek, Union House Creek, and several agricultural canals traverse portions of the study area. A portion of the study area is within the SRCSD bufferlands, which are open space lands surrounding the Sacramento Regional Wastewater Treatment Plant. The approximately 2,500-acre SRCSD bufferlands were acquired in the 1970s by the SRCSD to provide a buffer between the newly constructed plant and the neighboring community and to provide an area for future expansion of the plant.

Answers to Checklist Questions

The proposed project has the potential to be incompatible with existing land uses (e.g., agricultural operations) in the study area and may result in several short-term or construction-related (e.g., increased noise) land use effects on adjacent land uses. These potential effects will be evaluated in the land use analysis of the EIS/EIR to determine the severity of effects and identify whether mitigation will be required. The EIS/EIR will also include an analysis of the project's consistency with all applicable plans and policies.

Most of the land in the study area has been used for agricultural operations. Implementation of the proposed project would remove these lands from any future agricultural use. The proposed project could result in effects related to loss of potential farmland areas. Potential effects on agricultural land will be studied in more detail in the farmland analysis of the EIS/EIR.

POPULATION AND HOUSING

2. POPULATION AND HOUSING:	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
Would the proposal:				
A) Induce substantial growth in an area either directly or indirectly (e.g., through projects in an undeveloped area or extension of major infrastructure)?	X			
B) Displace existing housing, especially affordable housing?				X

Environmental Setting

The study area is located in the southwest portion of City of Sacramento and is bordered by urban land uses, including residential, commercial, industrial, park, and public/institutional lands. High-, medium-, and low-density housing is available in the surrounding residential developments.

Answers to Checklist Questions

The project would provide access to developable land on both sides of I-5, which would likely result in substantial growth in these areas. No housing would be displaced. Implementation of the proposed project is not anticipated to disrupt or divide the existing physical arrangement of an established community (including a low-income or minority community). The potential social and economic effects (including the project's consistency with Executive Order 12898) resulting from implementation of the proposed project will be evaluated in the socioeconomics analysis of the EIS/EIR.

SEISMICITY, SOILS, AND GEOLOGY

3. SEISMICITY, SOILS, AND GEOLOGY:	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
Would the proposal result in or expose people to potential impacts involving:				
A) Seismic hazards?	X			
B) Erosion, changes in topography or unstable soil conditions?	X			
C) Subsidence of land (groundwater pumping or dewatering)?	X			
D) Unique geologic or physical features?	X			

Environmental Setting

The study area is relatively flat with elevations ranging from a high of about 5 meters (m) (16 feet) above mean sea level (msl) near the east and west ends of the study area to a low of about 1 m (3.3 feet) msl near the central portion of the study area (Blackburn 2001a).

Regional Geology – The study area is located within the Great Valley, which lies between the Sierra Nevada on the east and Coast Ranges on the west. The Great Valley is a long, narrow, north to south trending trough thought to have once been connected with the Pacific Ocean and filled with seawater. Geologists speculate that the Great Valley became an isolated arm of the sea near the middle part of the Cretaceous Period (perhaps about 140 million years ago). Since that time, sediments derived from the mountains to the east and west have continually filled the Great Valley. The depth of the sediments exceed 3,050 meters (10,000 feet). (Blackburn 2001a.)

Local Geology – Based on review of published geologic maps, the extreme western portion of the alignment is immediately underlain by Quarternary Alluvial sediments. The remainder of the site is underlain by Quarternary Basin deposits and the Lower Member of the Riverbank formation. (Blackburn 2001a.)

Quaternary Alluvium (Qa) is generally composed of loose to medium dense, unweathered gravel, sand, silt, and clay deposited by present-day stream and river systems that drain the Coast Ranges, Klamath Mountains, and Sierra Nevada. These deposits form levees along the main coarse of the Sacramento River. Geologists estimate that these sediments were deposited 200 to 10,000 years ago during the Holocene period and vary in thickness from a few centimeters (1 to 2 inches) to 10 meters (30 feet). (Blackburn 2001a.)

Quaternary Basin deposits (Qb) generally consist of soft to stiff silt and clay. Similar to Qa, Geologists estimate that the basin deposits were laid down 200 to 10,000 years ago by stream and river deposits that drain the surrounding mountain ranges. The basis deposits are estimated to range in thickness from 1 to 60 meters (3 to 197 feet). (Blackburn 2001a.)

Lower Member Quaternary Riverbank (Qrl) sediments are generally composed of semiconsolidated gravel, sand, and silt deposited 130,000 to 450,000 years ago. The sediments near Sacramento were probably derived from the western slopes of the Sierra Nevada and deposited by the American River. The sediments form alluvial fans and terraces, which were dissected by subsequent rivers and streams. Based on our experience, the Riverbank formation is at least 30.5 meters (100 feet) thick and probably underlies the younger alluvium and basin deposits. (Blackburn 2001a.)

Site Specific Subsurface Soil Conditions – In general, the exploratory boring for the existing Stonecrest Avenue over crossing bridge (located in Qa and Qrl near the west end of the project) indicate the bridge is underlain by interbedded layers of stiff to hard silt, clay, and sandy silt; and medium dense sand and silty sand to the 23.5 m (77 feet) depth explored. Uncorrected SPT "N" values ranged from 15 to 62 with an average of about 29. (Blackburn 2001a.)

The exploratory borings for the Franklin Boulevard/Union House Creek bridge (located in Qrl near the east end of the project) indicate the bridge is underlain by interbedded layers of hard to very hard silt and sandy silt to the 16 m (52 feet) depth explored. Uncorrected SPT "N" values ranged from 48 to over 100. (Blackburn 2001a.)

Site Seismicity – No known faults cross the study area. The California Division of Mines and Geology Fault Activity Map and Caltrans 1996 California Seismic Hazard Map, indicate that the closest Late Quarternary or younger faults (less than 700,000 years old) are the following:

1. Coast Ranges-Sierran Block Boundary Seismic Zone located approximately 38 km (23 miles) west of the site.

2. Vaca-Kirby Hill-Montezuma Hills Fault located approximately 40 km (25 miles) southwest of the site.

3. Prairie Creek-Spenceville-Deadman Fault located approximately 43 km (27 miles) northeast of the site.

4. Dunnigan Hills Fault located approximately 43 km (27 miles) northwest of the site (Blackburn 2001a).

Answers to Checklist Questions

Use of design standards specified by Caltrans and in the Uniform Building Code will ensure that the potential for impacts of the project are minimized. The potential for the project to result in erosion, changes in topography, unstable soil conditions, or subsidence of land will be evaluated in the EIS/EIR.

WATER

4. WATER:	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
Would the proposal result in or expose people to potential impacts involving:				
A) Changes in absorption rates, drainage patterns, or the rate and amount of surface runoff?	X			
B) Exposure of people or property to water related hazards such as flooding?	X			
C) Discharge into surface waters or other alteration of surface water quality (e.g., temperature, dissolved oxygen or turbidity)?	X			
D) Changes in currents, or the course or direction of water movements?				X
E) Change in the quantity of ground waters, either through direct additions or withdrawal, or through interception of an aquifer by cuts or excavations or through substantial loss of groundwater recharge capability?				X
F) Altered direction or rate of flow of ground-water?	X			
G) Impacts to groundwater quality?	X			

Environmental Setting

Water Quality - Water quality of the Sacramento and American Rivers is usually of excellent quality, but can be prone to degradation by herbicides, pesticides, and pollutants from urban runoff and illegal dumping along the area creeks and drainageways. Water quality data on Morrison Creek is limited but suggest that water quality has been adversely affected by upstream pollutant sources of trace metals, such as those from commercial and industrial land uses.

Flooding – The 100-year floodplain of Beach Lake/Morrison Creek is within the study area (see Figure 6 for a map of the floodplain in the study area). The Federal Emergency

Management Agency (FEMA) has revised the effective Flood Insurance Rate Map and Flood Insurance Study for the City of Sacramento effective May 22, 2000.

Groundwater – Groundwater elevation maps prepared by the County of Sacramento, Water Resources Division, indicate regional groundwater depths of 1.5 to 9 m (5 to 30 feet) below the ground surface with the shallowest groundwater at the west end of the alignment near I-5. The groundwater flow gradient is to the east-southeast (Blackburn 2001a).

Information published by the California Department of Water Resources indicates that the groundwater level at a well near the west end of the project was 5.5 m (18 feet) below the ground surface on April 27, 2000. The boring logs from the existing Stonecrest Avenue over crossing bridge indicate groundwater at 5 m (16 feet) msl on November 2, 1967 (Blackburn 2001a).

The boring logs for the Franklin Boulevard/Union House Creek bridge indicate groundwater was not encountered to the 16 m (52 feet) depth explored. Exploratory borings for the Sacramento County sanitary sewer (Bradshaw Interceptor) located just south of the west end of the project, indicate groundwater ranging from 8 m to over 12.2 m (28 feet to over 40 feet) below the surface in July 1996 (Blackburn 2001a).

Answers to Checklist Questions

Construction of the proposed project could result in discharges to study area drainages. Potential effects on water quality will be addressed in the water quality analysis of the EIS/EIR.

Implementation of the proposed project could result in changes in absorption rates, drainage patterns, or the rate and amount of surface runoff in the study area. Potential effects on waterways and hydrologic systems will be addressed in the hydrology analysis of the EIS/EIR.

AIR QUALITY

5. AIR QUALITY:	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
Would the proposal:				
A) Violate any air quality standard or contribute to an existing or projected air quality violation?	X			
B) Expose sensitive receptors to pollutants?	X			
C) Alter air movement, moisture, or temperature, or cause any change in climate?				X
D) Create objectionable odors?				X

Environmental Setting

The study area is located in the Sacramento Valley, which is bounded by the Sierra Nevada on the east and the Coast Range on the west. Prevailing winds in the study area originate primarily from the southwest. These winds are the result of marine breezes coming through the Carquinez Straits. These marine breezes diminish during winter, and winds from the north occur more frequently at this time.

Air quality within the study area and surrounding region is largely influenced by urban emission sources. Because industrial emissions are minimal, these sources originate primarily from automobiles. Home fireplaces also contribute a significant portion of the air pollutants, particularly during winter. Air quality hazards are caused primarily by carbon monoxide (CO), particulate matter (PM10), and ozone, primarily as a result of motor vehicles. In 1998, the Sacramento area was within California Environmental Protection Agency attainment standards for all pollutants except ozone, which exceeded state standards on 42 days of the year. Although the Sacramento Metropolitan Air Quality Management District (SMAQMD) is a non-attainment area for PM10, it has not exceeded state or federal standards since 1991 (California Air Resources Board 1999). However, because Sacramento is designated as a non-attainment area, ozone, CO, and PM10 pollutant levels can easily exceed air quality standards if poor climate and emissions factors exist. SMAQMD is currently updating its 1999 guidelines for adopted thresholds for PM10 (particulate matter less than 10 microns in diameter), reactive organic gases (ROG), and nitrous oxides (NO_x).

Answers to Checklist Questions

Implementation of the proposed project could result in increased levels of air pollutants and has the potential to contribute to violation of air quality standards. The project also may expose sensitive receptors to pollutants. The project does not have the potential to alter air movement, moisture, or temperature or cause any change in climate. The project also will not create objectionable odors. Potential effects on air quality will be addressed in the air quality analysis of the EIS/EIR.

TRANSPORTATION AND CIRCULATION

6. TRANSPORTATION/CIRCULATION:	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
Would the proposal result in:				
A) Increased vehicle trips or traffic congestion?	X			
B) Hazards to safety from design features (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?			X	
C) Inadequate emergency access or access to nearby uses?	X			
D) Insufficient parking capacity on-site or off-site?			X	
E) Hazards or barriers for pedestrians or bicyclists?	X			
F) Conflicts with adopted policies supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	X			
G) Rail, waterborne or air traffic impacts?	X			

Environmental Setting

Freeways and Roads – The existing roadway system within the study area consists of I-5, Freeport Boulevard (State Highway 160, Franklin Boulevard, as well as a very few local streets. Implementation of the project will result in changes in existing circulation patterns. Development of the area would result in increased vehicle trips and traffic congestion. A traffic study will be completed for the project, and potential effects on traffic and circulation will be addressed in the transportation analysis of the EIS/EIR.

Public Transportation – Public transit bus routes in the study area are currently limited; however, the southern extension of RT's light rail system will travel along the existing UPRR rail lines bisecting the east end of the study area.

Answers to Checklist Questions

The project will be designed to current Caltrans and City design standards and will not result in hazards to safety from design features.

Construction of the interchange and roadway extension would change travel patterns in the study area and could result in increased trips and traffic congestion on area roadways. Emergency

access during construction may be limited. Potential impacts on pedestrians, bicyclists, buses and rail will be evaluated in the EIS/EIR.

BIOLOGICAL RESOURCES

7. BIOLOGICAL RESOURCES:	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
Would the proposal result in impacts to:				
A) Endangered, threatened or rare species or their habitats (including, but not limited to plants, fish, insects, animals and birds)?	X			
B) Locally designated species (e.g., heritage or City street trees)?	X			
C) Wetland habitat (e.g., marsh, riparian and vernal pool)?	X			

Environmental Setting

A variety of wildlife inhabit the existing open space lands of the study area and the adjacent SRCSD bufferlands. The open space provides habitat for small mammal prey species, such as deer mice, California voles, harvest mice, and house mice. Wildlife observed foraging or nesting in the study area include white-tailed kite, Swainson's hawk, burrowing owl, and red-tailed hawk. Common reptiles and amphibians include gopher snakes, common garter snakes, California king snakes, western fence lizards, and western toads.

Bridges and overhead structures may be used as roosting habitat for special-status bats or as nesting habitat for swifts and swallows. Morrison Creek, Union House Creek, and other study area drainages provide habitat for the federal- and state-listed giant garter snake. Potential invertebrate habitat is located in the study area. State-listed species observed in the study area include white-tailed kites and Swainson's hawks. The study area also provides potential habitat for burrowing owl.

Answers to Checklist Questions

Implementation of the proposed project could result in loss of habitat for threatened and endangered species. Potential effects on threatened and endangered species will be addressed in the biological resources analysis of the EIS/EIR.

Several perennial and seasonal streams, including Morrison Creek, Union House Creek, and drainage canals, with associated wetland and riparian vegetation are located within the study area. Implementation of the proposed project could result in loss of wetlands and waters of the United States. A wetland delineation will be prepared for the project. Potential effects on

wetlands and waters of the United States will be addressed in the biological resources analysis of the EIS/EIR.

ENERGY

8. ENERGY:	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
Would the proposal result in impacts to:				
A) Power or natural gas?			X	
B) Use non-renewable resources in a wasteful and inefficient manner?			X	
C) Substantial increase in demand of existing sources of energy or require the development of new sources of energy?				X

Environmental Setting

Although the study area is undeveloped, there are several facilities and pump stations that are served by power or natural gas.

Answers to Checklist Questions

The project does not proposed any changes to existing electrical or natural gas systems. The only energy-related impacts would be a slight increase in demand for street lights and possible disruption of service during construction. These impacts are considered less than significant. Construction of the project would consume fossil fuels and other sources of energy during construction. This impact is considered less than significant.

HAZARDS

9. HAZARDS:	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
Would the proposal involve:				
A) A risk of accidental explosion or release of hazardous substances (including, but not limited to: oil, pesticides, chemicals or radiation)?	X			
B) Possible interference with an emergency evacuation plan?				X
C) The creation of any health hazard or potential health hazard?				X
D) Exposure of people to existing sources of potential health hazards?	X			
E) Increased fire hazard in areas with flammable brush, grass, or trees?				X

Environmental Setting

Historical releases of hazardous materials have the potential to adversely impact human health if they are unexpectedly encountered during construction or if they affect project elements during the lifetime of a project. A draft initial site assessment has been prepared by Blackburn Consulting. Except for the potential occurrence of aerially deposited lead and possible transformer relocation/removal, no hazardous materials issues were identified in the study area. (Blackburn 2001b.)

Answers to Checklist Questions

Construction of the interchange and roadway extension would involve the possible risk of accidental release of hazardous substances during construction. This issue will be addressed in the EIS/EIR.

The project will not create any health hazard or potential health hazard. A preliminary site investigation will be conducted to determine the presence (if any) and extent of aerially deposited lead. Potential effects related to the presence of hazardous waste sites will be addressed in the hazardous waste analysis of the EIS/EIR.

The project is located in an area that does not contain substantial areas of brush, grass, or trees that could be flammable when dry. There are not sufficient fuel materials to pose a significant fire hazard in the study area.

NOISE

10. NOISE	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
Would the proposal result in:				
A) Increases in existing noise levels?				
Short Term	X			
Long Term	X			
B) Exposure of people to severe noise levels?				
Short Term	X			
Long Term	X			

Environmental Setting

Noise is defined as unwanted sound. Sound levels are usually measured and expressed in decibels (dB) with 0 dB being the threshold of hearing. Decibel levels range from zero to 140. Typical examples of decibel levels would be a low decibel level of 50 dB for light traffic to a high decibel level of 120 dB for a jet takeoff at 200 feet.

The primary noise source that contributes to ambient noise levels within and adjacent to the study area is traffic from I-5 and from adjacent arterial, collector, and local streets. A more modest noise source is human activity that occurs from industrial, commercial, and residential developments located adjacent to the study area.

Answers to Checklist Questions

Implementation of the proposed project could expose sensitive receptors to increased noise. Potential effects related to noise will be addressed in the noise analysis of the EIS/EIR.

PUBLIC SERVICES

11. PUBLIC SERVICES:	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
Would the proposal have an effect upon, or result in a need for new or altered government services in any of the following areas:				
A) Fire protection?	X			
B) Police protection?	X			
C) Schools?				X
D) Maintenance of public facilities, including roads?	X			
E) Other governmental services?				X

Environmental Setting

The City of Sacramento Police Department provides police protection service within the project areas, including law enforcement, crime prevention, and community relation services. Fire protection and emergency medical services and first response hazardous materials services are provided by the City of Sacramento Fire Department. The study area is within the Sacramento City school districts and Cosumnes River College Maintenance of public facilities in the study area would be provided by the City.

Answers to Questions

The project would provide access to developable land on both sides of I-5, which would likely result in substantial growth in the need for public services to serve the new development. Effects on public services will be addressed in the public services and utilities analysis of the EIS/EIR.

UTILITIES

12. UTILITIES:	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
Would the proposal result in the need for new systems or supplies, or substantial alterations to the following utilities:				
A) Communication systems?	X			
B) Local or regional water supplies?	X			
C) Local or regional water treatment or distribution facilities?	X			
D) Sewer or septic tanks?	X			
E) Storm water drainage?	X			
F) Solid waste disposal?	X			

Environmental Setting

The study area is currently largely undeveloped and is located adjacent to the Sacramento Regional Wastewater Treatment Plant. There are several levees, access roads, transmission lines, and other utility structures located on or bordering the study area.

Answers to Checklist Questions

The project would provide access to developable land on both sides of I-5, which would likely result in increased demand for new utility systems to serve the new development. Construction-related activities associated with the project will likely result in the relocation of aboveground and belowground utility service infrastructure (e.g., water transmission lines) currently located in the study area. The need for new utility services and potential relocation effects will be addressed in the public services and utilities analysis of the EIS/EIR.

AESTHETICS, LIGHT AND GLARE

13. AESTHETICS, LIGHT AND GLARE:	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
Would the proposal:				
A) Affect a scenic vista or adopted view corridor?				X
B) Have a demonstrable negative aesthetic effect?	X			
C) Create light or glare?	X			
D) Create shadows on adjacent property?				X

Environmental Setting

The study area is located in the City of Sacramento and is bordered primarily by developed lands, including residential, commercial, industrial, park/open space, and public/institutional uses. Views of the study area are primarily from Freeport Boulevard, I-5, and Franklin Boulevard and are dominated by extensive open fields and the SRWTP bufferlands.

Answers to Checklist Questions

Implementation of the proposed project could affect the visual quality of the study area for nearby residents and travelers on I-5 by introducing a new visual element into the existing setting. Potential effects on visual resources will be addressed in the aesthetics analysis of the EIS/EIR.

CULTURAL RESOURCES

14. CULTURAL RESOURCES	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
Would the proposal:				
A) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	X			
B) Cause a substantial adverse change in the significance of an archaeological resource as defined in Section 15064.5?	X			
C) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	X			
D) Disturb any human remains, including those interred outside of formal cemeteries?	X			

Environmental Setting

The study area is within lands formerly occupied by the Plains Miwok. Before European settlement, Plains Miwok territory extended from north of the Cosumnes River to south of the Mokelume River. Spanish explorers arriving in the late 1700s were the first people other than Native Americans to enter the Sacramento Valley. The region was largely unaffected by Spanish occupation and lands were not claimed for private ownership until Mexican land grants were issued in the 1830s. The discovery of gold in the foothills in 1848 resulted in a tremendous growth in the Sacramento region, and by the 1860s there were numerous agricultural enterprises such as farms, ranches, and dairies in the valley.

Elevations range from a high of about 5 m (16 feet) above msl near the east and west ends of the study area to a low of about 1 m (3.3 feet) above msl near the central portion of the study area (Blackburn 2001a).

Answers to Checklist Questions

Implementation of the proposed project could result in changes in or disturbance to potential cultural resources. Potential effects on cultural resources will be addressed in the cultural resources analysis of the EIS/EIR.

RECREATION

15. RECREATION:	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
Would the proposal:				
A) Increase the demand for neighborhood or regional parks or other recreational facilities?				X
B) Affect existing recreational opportunities?				X

The project is construction of a new interchange and roadway extension. Construction of the interchange and roadway would provide access to developable land adjacent to I-5, which would likely develop and result in increased demand for recreational facilities to serve the new development; however, construction of the proposed project would not increase the demand for neighborhood or regional parks or other recreational facilities, nor would it affect existing recreational opportunities. This issue will not be addressed in the EIS/EIR.

MANDATORY FINDINGS OF SIGNIFICANCE

16. MANDATORY FINDINGS OF SIGNIFICANCE:	Potentially Significant Impact	Potentially Significant Impact Unless Mitigated	Less Than Significant Impact	No Impact
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?	X			
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.)	X			
C. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	X			

This Initial Study identifies potential impacts of the proposed project without mitigation and therefore each identified environmental effect is characterized as either a potentially significant impact or no impact. The potential for the project 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 will be further addressed in the EIS/EIR to be prepared for the project.

Both NEPA and CEQA require an analysis of cumulative impacts. The incremental effects of an individual project are considerable when viewed in connection with the effects of past, current, and probable future projects (Guidelines secs. 15064[i][1], 15130). Cumulative effects result from the proposed action's incremental impacts when these impacts are added to the impacts of other past, present, and reasonably foreseeable future actions, regardless of the agency or person who undertakes them. Cumulative effects can result from individually minor, but collectively significant, actions that take place over time.

The following future projects have been identified as occurring in the project vicinity. A cumulative analysis of the impacts of the proposed project in combination with these and other project identified during the scoping process will be included in the EIS/EIR.

- Sacramento Regional Transit District (RT) South Line Extension
- Sacramento Regional County Sanitation District (SRCSD) Lower Northwest Interceptor (LNWI) project
- County of Sacramento/East Bay Municipal Utilities District (EBMUD) Freeport Water Intake and Pipeline project
- Sacramento Area Flood Control Agency (SAFCA) Morrison Creek Levee Improvement project
- Delta Shores project
- Stone Family Trust project

SECTION IV - ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would potentially be affected by this project.

X	Land Use and Planning	X	Hazards
X	Population and Housing	X	Noise
X	Geological Problems	X	Public Services
X	Water	X	Utilities and Service Systems
X	Air Quality	X	Aesthetics
X	Transportation/Circulation	X	Cultural Resources
X	Biological Resources		Recreation
	Energy and Mineral Resources	X	Mandatory Findings of Significance
	None Identified		

DETERMINATION

An Initial Study has been prepared by the City of Sacramento and Caltrans. On the basis of this study, it is determined that the proposed action could have a significant effect upon the environment for the following reasons:

Impacts related to land use, population and housing, geologic problems, water, air quality, transportation/circulation, biological resources, hazards, noise, public service, utilities and service systems, aesthetics, and cultural resources could potentially be significant. Therefore, an EIS/EIR shall be prepared to analyze the effects of the project on these environmental factors.

Grace Hovey 2/4/02

Grace Hovey, City of Sacramento Associate Planner Date

for Japtej S Gill 2/4/02

Kome Ajise, Caltrans Planning Division Chief, North Region Date

SECTION V - REFERENCES

PRINTED REFERENCES

Blackburn Consulting, Inc. 2001a. Cosumnes River Boulevard Interchange: Preliminary geology and geotechnical report. November. Prepared for Mark Thomas & Co., Inc. Sacramento, CA.

_____. 2001b. Draft initial site assessment report: Cosumnes River Boulevard Interchange, Sacramento County, California. November 29, 2001. Prepared for Mark Thomas & Co., Inc. Sacramento, CA.

Mark Thomas & Co., Inc. 2001. Project study report (project development support): on Route 5 in the City of Sacramento, near the Stonecrest Overcrossing between Morrison Creek and Meadowview Road. Prepared for Caltrans Special Funded Projects, Sacramento, CA. Sacramento, CA.

PERSONAL COMMUNICATIONS

Don Lockhart, Associate Planner, City of Sacramento Planning and Building Department, Long-Range Division, Sacramento, CA – January 15, 2002 – telephone conversation with V. Axiaq.

SECTION VI - LIST OF PREPARERS AND REVIEWERS

REVIEWERS

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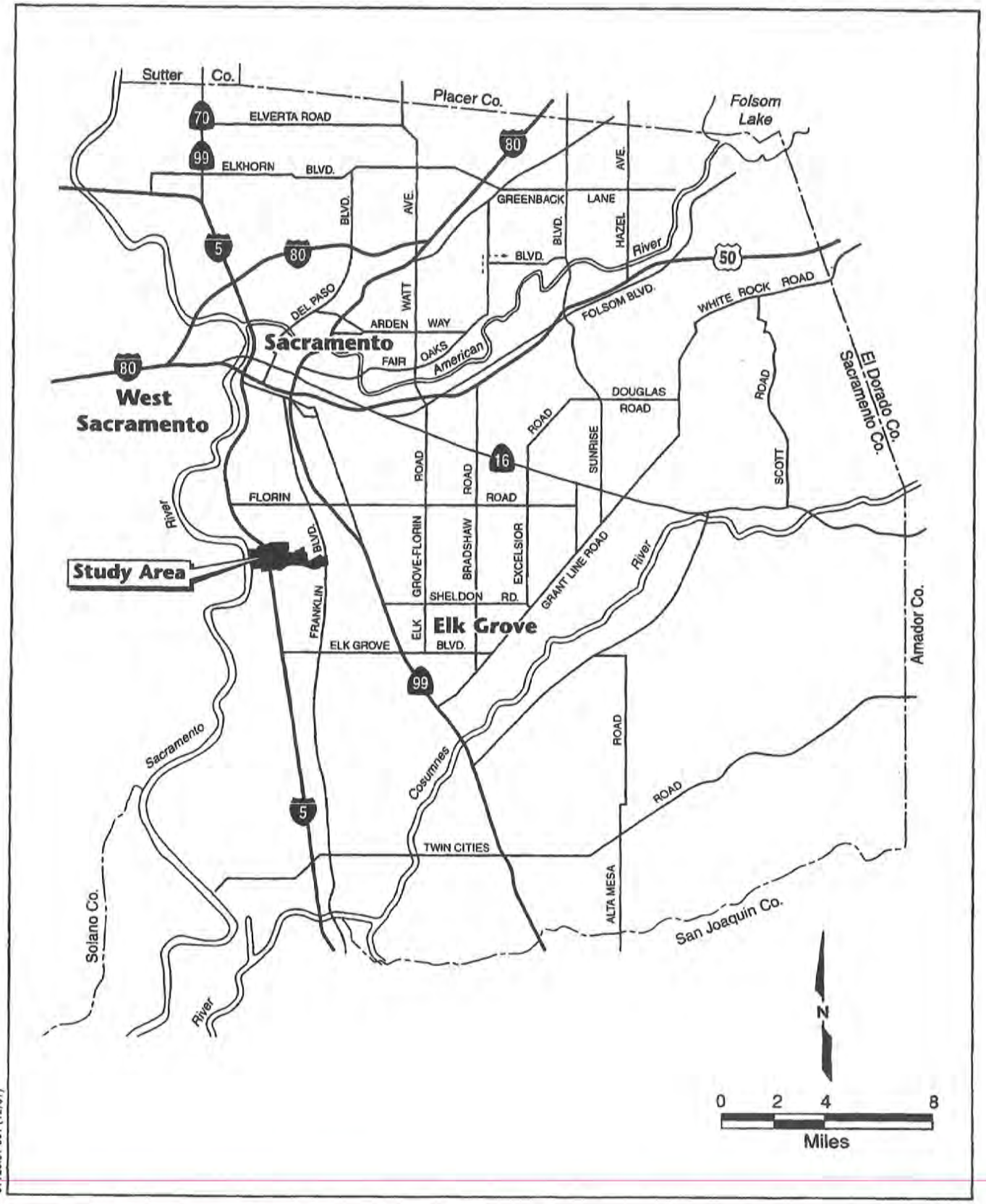

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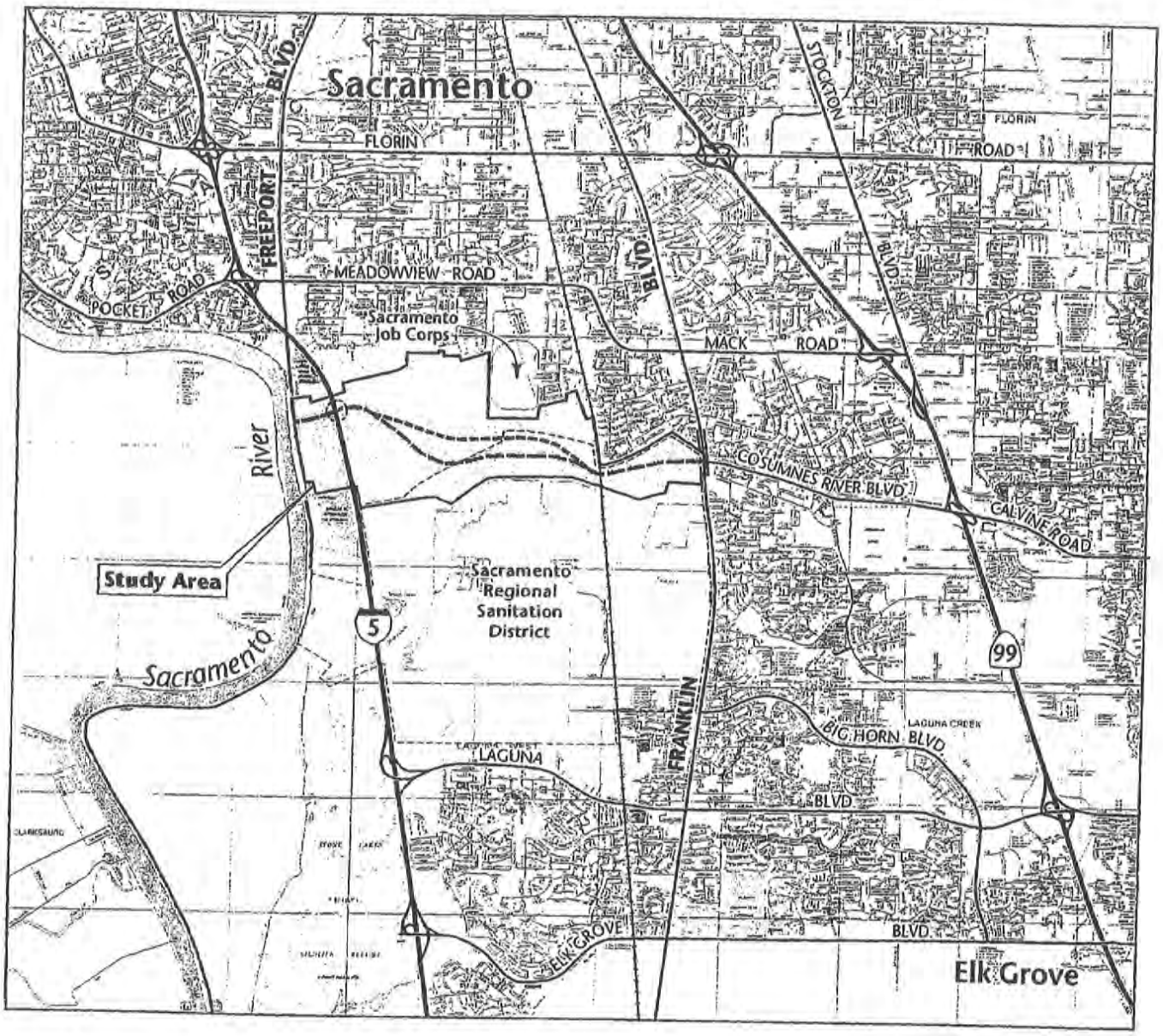
Figure 1
Vicinity Map
I-5/Cosumnes River Boulevard Interchange Project



Legend

- North Alignment
- South Alignment
- Proposed Interchange Location
- SRCSD Boundary

N

0 4,000
Feet

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Figure 2
Location Map
I-5/Cosumnes River Boulevard Interchange Project

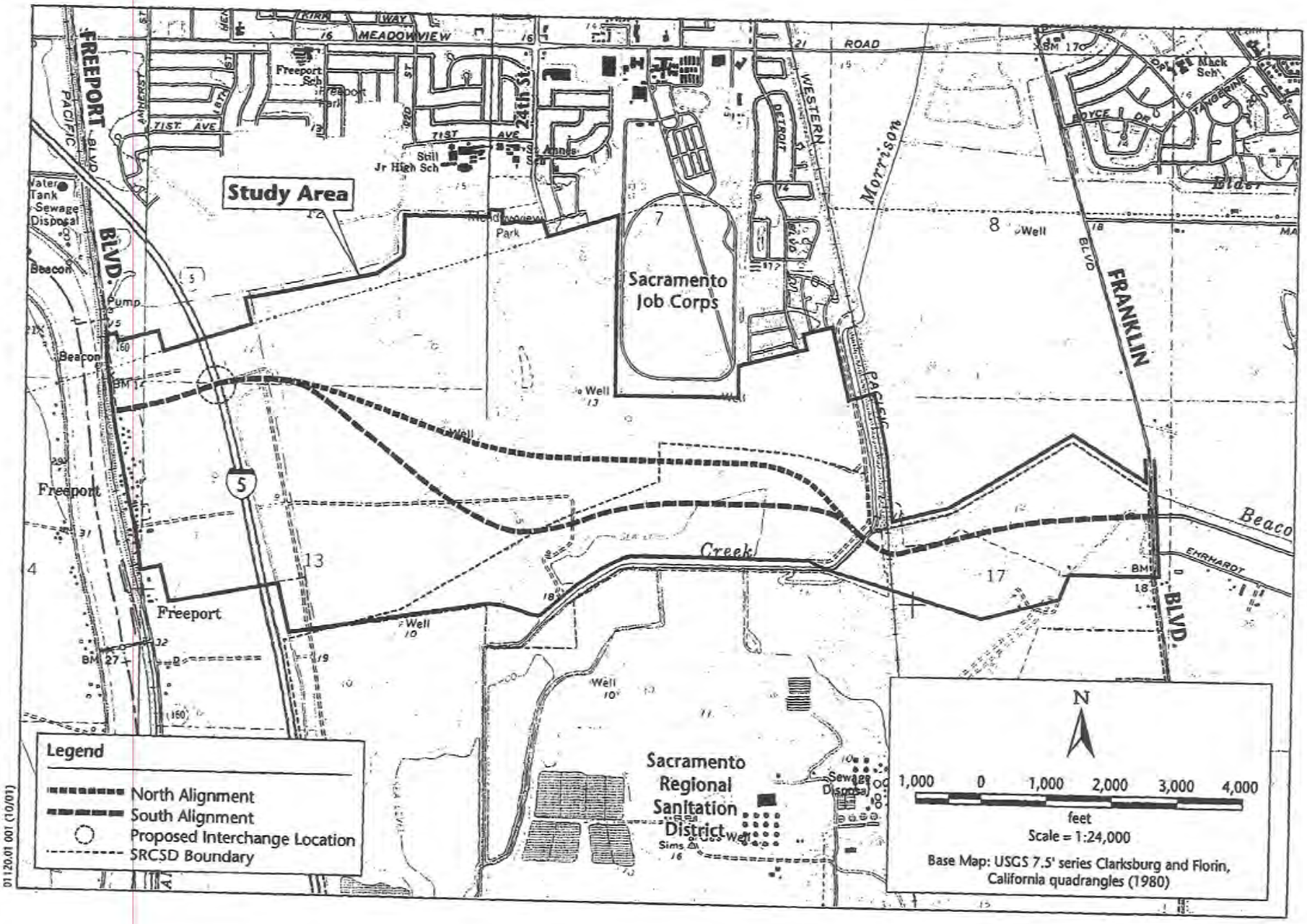

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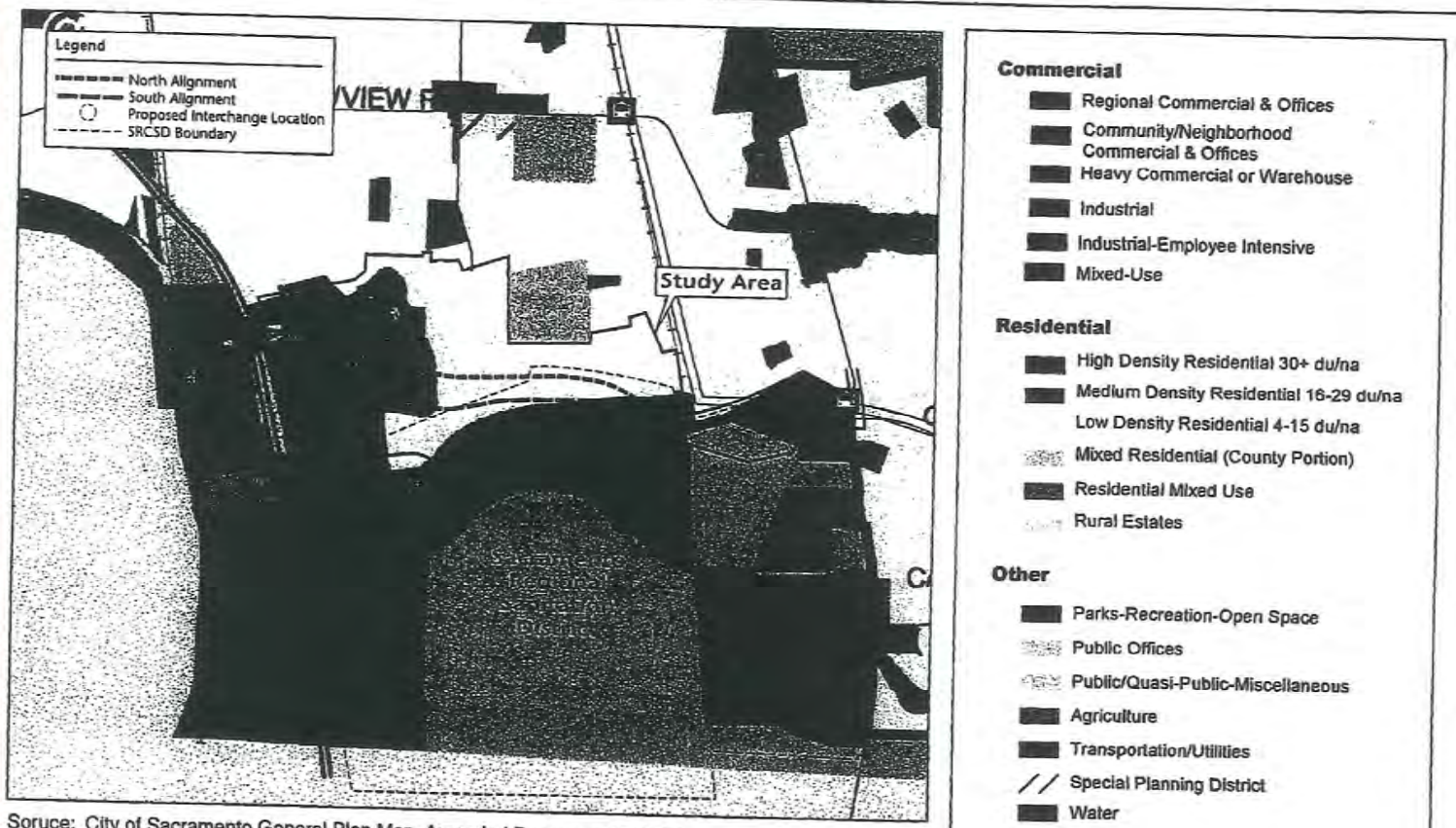
Figure 3
Topographic Map
I-5/Cosumnes River Boulevard Interchange Project



Soruce: City of Sacramento General Plan Map, Amended December 12, 2000.

Commercial

- Regional Commercial & Offices
- Community/Neighborhood Commercial & Offices
- Heavy Commercial or Warehouse
- Industrial
- Industrial-Employee Intensive
- Mixed-Use

Residential

- High Density Residential 30+ du/na
- Medium Density Residential 16-29 du/na
- Low Density Residential 4-15 du/na
- Mixed Residential (County Portion)
- Residential Mixed Use
- Rural Estates

Other

- Parks-Recreation-Open Space
- Public Offices
- Public/Quasi-Public-Miscellaneous
- Agriculture
- Transportation/Utilities
- Special Planning District
- Water

N

0 2,000 4,000 8,000

Feet

- Interstates
- Major Streets
- Heavy Rail
- Light Rail (Existing)
- Light Rail (Proposed)
- Light Rail Stations (Existing)
- Light Rail Stations (Proposed)

- City Limits
- Rivers / Lakes
- Colleges / Universities
- Proposed Interchange
- Interchange (Half)
- Interchange

GP.APR | JUNE 2001

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Figure 4
General Plan Land Uses
I-5/Cosumnes River Boulevard Interchange Project

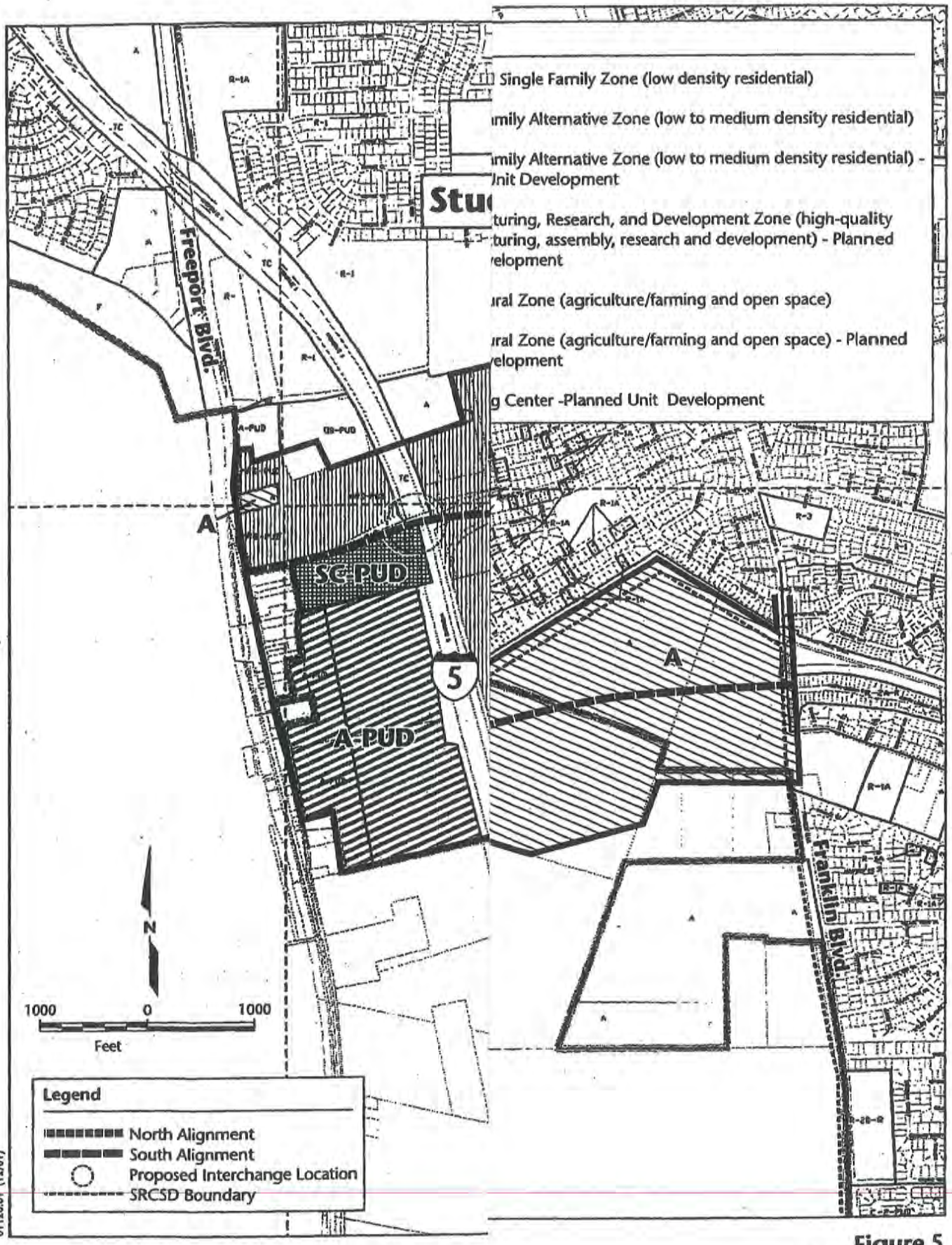

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Figure 5
Zoning Map
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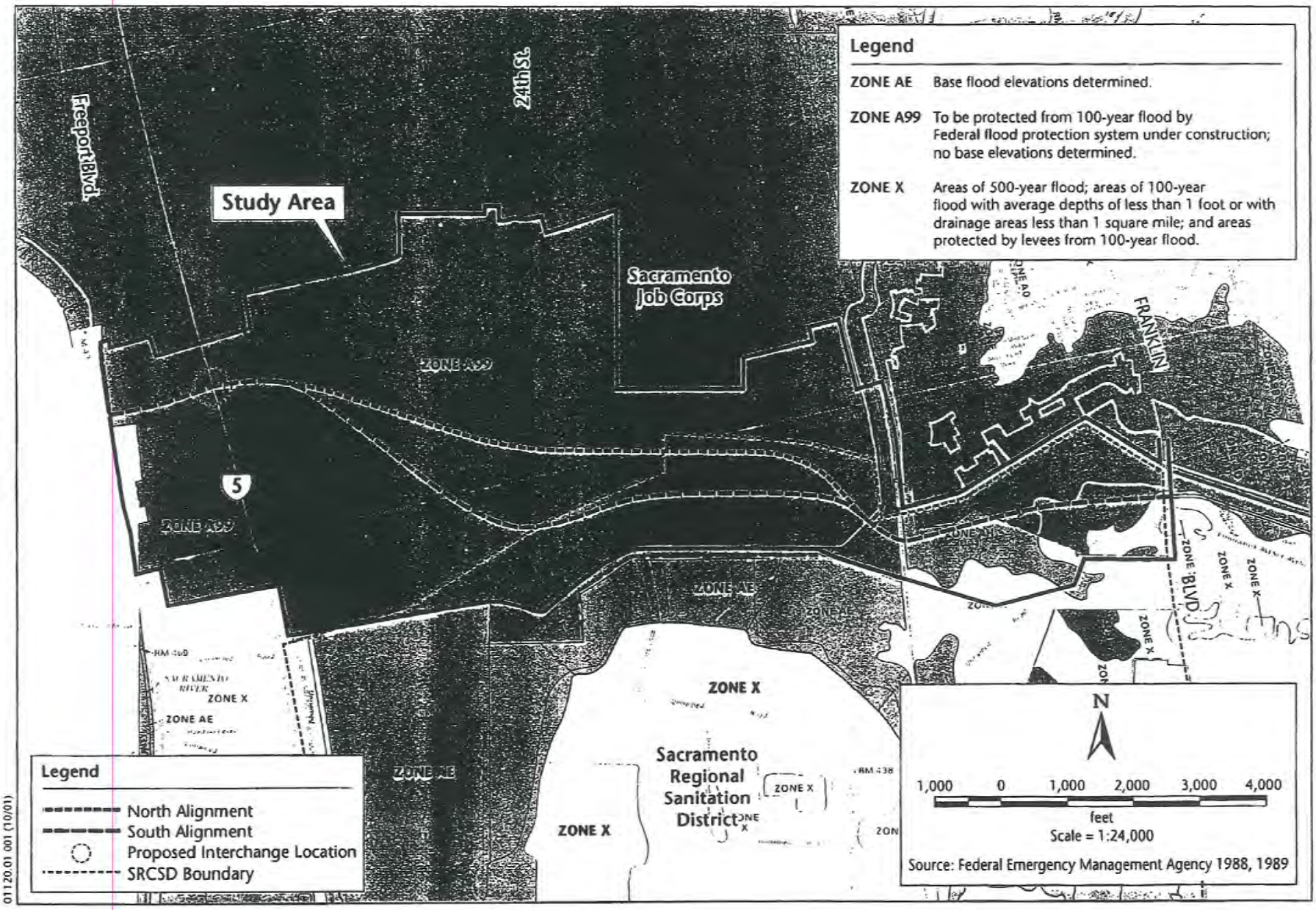

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Figure 6
Floodplain Map
I-5/Cosumnes River Boulevard Interchange Project

Appendix B Title VI Policy Statement

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Flex your power!
Be energy efficient!

January 14, 2005

TITLE VI
POLICY STATEMENT

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

Will Kempton

WILL KEMPTON
Director

Appendix C Plant Species Encountered in the Project Area

Appendix C Plant Species Encountered in the Project Area

Scientific Name	Common Name
Acer negundo	Box elder
Achyrachaena mollis	Blow-wives
Alisma lanceolatum	Lance-leaved water-plantain
Alnus rhombifolia	White alder
Amsinckia menziesii var. *intermedia*	Common fiddleneck
Anagallis arvensis	Scarlet pimpernel
Anthemis cotula	Mayweed
Artemisia douglasiana	Mugwort
Aster subulatus var. *ligulatus*	Annual saltmarsh aster
Avena fatua	Wild oat
Baccharis pilularis	Coyote brush
Bidens frondosa	Nodding beggarticks
Brassica nigra	Black mustard
Brassica rapa	Field mustard
Bromus diandrus	Ripgut brome
Bromus hordeaceus	Soft chess
Capsella bursa-pastoris	Shepherd's-purse
Carex praegracilis	Field sedge
Centaurea solstitialis	Yellow star-thistle
Cephalanthus occidentalis var. *californicus*	Buttonbush
Convolvulus arvensis	Field bindweed
Conyza canadensis	Horseweed
Crypsis schoenoides	Swamp grass
Cynodon dactylon	Bermudagrass
Cyperus sp.	Nutsedge
Cyperus eragrostis	Sedge
Daucus carota	Wild carrot
Deschampsia caespitosa	Tufted hairgrass
Distichlis spicata	Salt grass
Echinochloa crus-galli	Barnyard grass
Eleocharis macrostachya	Creeping spikerush
Elymus glaucus	Blue wild rye
Epilobium brachycarpum	Panicled willow-herb
Eremocarpus setigerus	Doveweed
Erodium botrys	Big heronbill
Erodium moschatum	White-stemmed filaree
Eschscholzia californica	California poppy
Foeniculum vulgare	Sweet fennel
Fraxinus latifolia	Oregon ash
Geranium dissectum	Cut-leaf geranium
Helianthus annuus	Sunflower
Hordeum brachyantherum	Meadow barley
Hordeum jubatum	Foxtail barley
Hordeum marinum ssp. *gussoneanum*	Mediterranean barley
Hypochaeris glabra	Soft cat's-ear
Juglans californica var. *hindsii*	Black walnut
Juncus balticus	Baltic rush
Juncus xiphioides	Iris-leaf rush
Lactuca serriola	Prickly lettuce
Lasthenia glaberrima	Smooth goldfields
Lemna aequinoctialis	Duckweed
Leymus triticoides	Creeping wildrye
Lepidium latifolium	Perennial peppergrass

Scientific Name	Common Name
Lepidium nitidum var. *nitidum*	Common peppergrass
Lolium multiflorum	Italian ryegrass
Ludwigia peploides	Yellow water weed
Lythrum hyssopifolia	Hyssop loosestrife
Maclura pomifera	Osage orange
Malvella leprosa	Alkali mallow
Marsiliea vestita	Hairy pepperwort
Medicago polymorpha	Bur-clover
Medicago sativa	Alfalfa
Melilotus indica	Indian sweet-clover
Mentha pulegium	Pennyroyal
Paspalum dilatatum	Dallisgrass
Phalaris minor	Canary grass
Phleum pratense	Cultivated timothy
Physalis lancifolia	Ground cherry
Picris echioides	Bristly ox-tongue
Plagiobothrys stipitatus var. *micranthus*	Small stipitate popcorn flower
Plagiobothrys stipitatus var. *stipitatus*	Stipitate popcorn flower
Plantago lanceolata	English plantain
Plantago major	Broadleaf plantain
Platanus racemosa	Western sycamore
Pogogyne zizyphoroides	Sacramento mesa mint
Polygonum amphibium	Water smartweed
Polygonum arenastrum	Common knotweed
Polygonum persicaria	Thumbprint smartweed
Polypogon monspeliensis	Rabbitsfoot grass
Populus fremontia ssp. *fremontia*	Fremont's cottonwood
Quercus douglasii	Blue oak
Quercus lobata	Valley oak
Ranunculus muricatus	Prickle-fruited buttercup
Raphanus sativus	Wild radish
Rorippa curvisiliqua	Yellow cress
Rosa californica	California rose
Rubus discolor	Himalayan blackberry
Rumex crispus	Curly dock
Rumex pulcher	Fiddle dock
Salix exigua	Narrow-leaved willow
Salix gooddingii	Goodding's willow
Salix laevigata	Red willow
Salix lasiolepis	Arroyo willow
Salix lucida var. *lasiandra*	Yellow willow
Sambucus mexicana	Blue elderberry
Scirpus acutus var. *occidentalis*	Bulrush
Setaria pumila	Bristly foxtail
Silybum marianum	Milk thistle
Sonchus oleraceus	Common sow-thistle
Sorghum halapense	Johnsongrass
Taeniatherum caput-medusae	Medusa-head
Toxicodendron diversilobum	Poison oak
Tribulus terrestris	Puncture vine
Trichostemma lanceolatum	Vinegar weed
Typha latifolia	Broad-leaved cattail
Typha sp.	Cattail
Urtica dioica	Stinging nettle
Veronica peregrina ssp. *xalapensis*	Purselane speedwell
Vicia sativa ssp. *nigra*	Common vetch
Vicia villosa ssp. *villosa*	Hairy vetch
Vulpia mcirostachys	Vulpia
Xanthium strumarium	Common cocklebur

Appendix D Wildlife Species Encountered in the Project Area

Appendix D Wildlife Species Encountered in the Project Area

Scientific Name	Common Name
Accipiter cooperii	Cooper's hawk
Agelaius phoeniceus	Red-winged blackbird
Aix sponsa	Wood duck
Anas platyrhynchos	Mallard
Anas strepera	Gadwall
Anthus rubescens	American pipit
Anus cyanoptera	Cinnamon teal
Aphelocoma coerulescens	Scrub jay
Ardea alba	Great egret
Ardea herodias	Great blue heron
Athene cunicularia	Burrowing owl
Bubo virginianus	Great horned owl
Buteo jamaicensis	Red-tailed hawk
Buteo lineatus	Red-shouldered hawk
Buteo regalis	Ferruginous hawk
Buteo swainsoni	Swainson's hawk
Butorides striayus	Green heron
Callipepla californica	California quail
Calypte anna	Anna's hummingbird
Canis latrans	Coyote
Casmerodius albus	Great egret
Castor canadensis	Beaver
Cathartes aura	Turkey vulture
Ceryle alcyon	Belted kingfisher
Charadrius vociferous	Killdeer
Circus cyaneus	Northern harrier
Cistothorus palustris	Marsh wrèn
Citellus beecheyi	California ground squirrel
Colaptes auratus	Northern flicker
Corvus brachyrhynchos	American crow
Dendroica coronata	Yellow-rumped warbler
Dendroica petechia	Yellow warbler
Didelphis virgiana	Virginia opossum
Egretta thula	Snowy egret
Elanus leucurus	White-tailed kite
Empidonax difficilis	Pacific-slope flycatcher
Empidonax traillii	Willow flycatcher
Eremophila alpestris	Horned lark
Euphagus cyanocephalus	Brewer's blackbird
Falco Sparverius	American kestrel
Fulica americana	American coot
Gallinula chloropus	Common moorhen
Geothlypis trichas	Common yellowthroat
Grus canadensis	Sandhill crane
Hirundo pyrrhonota	Cliff swallow
Hirundo rustica	Barn swallow
Lanius ludovicianus	Loggerhead shrike

Scientific Name	Common Name
Larus delawarensis	Ring-billed gull
Lepus californicus	Blacktailed jackrabbit
Lutra canadensis	River otter
Megus merganser	Common merganser
Melospiza lincolnii	Lincoln's sparrow
Melospiza melodia	Song sparrow
Mephitis mephitis	Striped Skunk
Mustela vison	Mink
Numenius americanus	Long-billed curlew
Ondatra zibethicus	Muskrat
Passerculus sandwichensis	Savannah sparrow
Phasianus colchicus	Ring-necked pheasant
Pica nuttali	Yellow-billed magpie
Pipilo maculatus	Spotted towhee
Podilymbus podiceps	Pied-billed grebe
Procyon lotor	Raccoon
Rallus limicola	Virginia rail
Regulus calendula	Ruby-crowned kinglet
Sayornis nigricans	Black phoebe
Sayornis saya	Say's phoebe
Sturnella neglecta	Western meadowlark
Sturnus vulgaris	European starling
Sylvilagus audubonii	Audubon's Cottontail
Tachycineta bicolor	Tree swallow
Tadarida brasiliensis	Guano Bat
Tringa melanoleuca	Greater yellowlegs
Tyrannus verticalis	Western kingbird
Tyto alba	Barn owl
Zenaida aurita	Mourning dove
Zenaida macroura	Mourning dove
Zonotrichia atricapilla	Golden-crowned sparrow
Zonotrichia leucophrys	White-crowned sparrow
Sturnella neglecta	Western meadowlark
Carpodacus mexicanus	House finch
Thamnophis elegans	Western Terrestrial Garter Snake
Pituophis catenifer	Gopher Snake
Lampropeltis getula	Common king Snake
Thamnophis sirtalis	Common garter snake
Coluber constrictor	Racer

Appendix E Agency Correspondence and Public Involvement

U.S. Environmental Protection Agency
Federal Register Environmental Documents
Recent Additions | Contact Us | Search: GO
EPA Home > Federal Register > FR Years > FR Months > FR Days > FR Daily > Environmental Impact Statement; Sacramento, CA

Environmental Impact Statement; Sacramento, CA

[Federal Register: February 11, 2002 (Volume 67, Number 28)]
[Notices]
[Page 6317]
From the Federal Register Online via GPO Access [wais.access.gpo.gov]
[DOCID:fr11fe02-110]

DEPARTMENT OF TRANSPORTATION
Federal Highway Administration

Environmental Impact Statement; Sacramento, CA

AGENCY: Federal Highway Administration (FHWA), DOT.
ACTION: Notice of intent.

SUMMARY: The FHWA is issuing this notice to advise the public that an environmental impact statement will be prepared for a proposed highway project in Sacramento, California.

FOR FURTHER INFORMATION CONTACT: Maiser Khaled, Federal Highway Administration, 980 Ninth Street, Suite 400, Sacramento, CA 95814-2724.

SUPPLEMENTARY INFORMATION: The FHWA, in cooperation with the California Department of Transportation, will prepare an environmental impact statement (EIS) on a proposal to analyze the effect of constructing the Interstate 5 (I-5)/Cosumnes River Boulevard interchange and extension of Cosumnes River Boulevard to Franklin Boulevard. The project is located in the southwest portion of the City of Sacramento.

The project is to extend Cosumnes River Boulevard from its current westerly terminus at Franklin Boulevard to an interchange with I-5 and potentially further west to Freeport Boulevard (State Route 160). Alternative under consideration include (1) taking no action, (2) constructing Cosumnes River Boulevard from Franklin Boulevard west to I-5 with an interchange at I-5, and (3) constructing Cosumnes River Boulevard from Franklin Boulevard west across I-5 toward the Sacramento River to Freeport Boulevard with an interchange at I-5. Two alternative alignments are proposed for the Cosumnes River Boulevard connection between Franklin Boulevard and the proposed I-5 interchange.

Based on preliminary design information, the two build alternatives would have identical impacts on wetlands and special-status species. Mitigation would be required for both build alternatives. Mitigation opportunities are available within the study area and in the region.

Letters describing the proposed action and soliciting comments will

be sent to appropriate federal, state, and local agencies and to private organization and citizens who have previously expressed or are known to have interest in this proposal. A public scoping meeting will be held in Sacramento from 4 p.m. to 7 p.m. on Tuesday, February 26, 2002, to obtain comments on environmental issues of concern. The meeting will take place in Conference Room A of the Pannell Meadowview Center, which is located at 2450 Meadowview Road, Sacramento, California.

Representatives from Caltrans, the City of Sacramento, the Design Engineer, and the Environmental Consultant will be present to discuss the proposed action and environmental concerns. Additionally, a public hearing will be held when the draft EIS is released. Public notice will be given of the time and place of the hearing. The draft EIS will be available for public and agency review and comment prior to the public hearing.

To ensure that the full range of issues related to this proposed action are addressed and all significant issues identified, comments and suggestions are invited from all interested parties. Comments or questions concerning the proposed action should be directed to the FHWA at the address provided above.

(Catalog of Federal Domestic Assistance Program Number 20.205, Highway Planning and Construction. The regulations implementing Executive Order 12372 regarding intergovernmental consultation on federal programs and activities apply to the program.)

Issued on: February 5, 2002.
Maiser Khaled,
Chief, District Operations--North.
[FR Doc. 02-3173 Filed 2-8-02; 8:45 am]
BILLING CODE 4910-22-M

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NOTICE OF PREPARATION OF AN EIR

Date: February 20, 2002

From: City of Sacramento Planning and Building Department
Grace Hovey, Associate Planner
Planning Division
1231 I Street Room 300
Sacramento, CA 95814
916/264-7601
Fax: 916/264-7185
E-mail: ghovey@cityofsacramento.org

Subject: Notice of Preparation of a Draft Environmental Impact Statement/ Environmental Impact Report (EIS/EIR) – Interstate 5/Cosumnes River Boulevard Interchange Project

The Federal Highway Administration (FHWA), California Department of Transportation (Caltrans), and the City of Sacramento (City) are preparing an EIS/EIR to analyze the effect of constructing the Interstate 5 (I-5)/Cosumnes River Boulevard interchange and extension of Cosumnes River Boulevard to Franklin Boulevard. The project is located in the southwest portion of the city. Pursuant to Section 15082 of the State CEQA Guidelines, the City, as the Lead Agency under CEQA, is required to send a notice of preparation of an environmental document to any federal and state agencies with discretionary approval over the project. We need to know the views of your agency as to the scope and content of the environmental information which is germane to your agency's statutory responsibilities in connection with the proposed project. Your agency will need to use the EIS/EIR prepared by our agency when considering your permit or other approval for the project.

The project description, location, and the potential environmental effects are contained in the attached Initial Study.

Due to the time limits mandated by State law, your response must be sent at the earliest possible date but not later than 30 days from receipt of this letter.

Please send your response to Grace Hovey at the address shown above. We will need the name of a contact person in your agency.

Project Title: I-5/Cosumnes River Boulevard Interchange Project

Project Applicant, if any: City of Sacramento, Department of Public Works, Gwen Owens, Supervising Engineer

Attachment: CEQA Initial Study

Reference: California Code of Regulations, Title 14, (CEQA Guidelines) Sections 15082(a), 15103, 15375.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

March 12, 2002

Maiser Khaled
Federal Highway Administration
980 Ninth Street
Suite 400
Sacramento, CA 95814-2724

Dear Mr. Khaled:

The U.S. Environmental Protection Agency (EPA) has reviewed the Federal Highway Administration's (FHWA) Notice of Intent (NOI), published on February 11, 2002, to prepare a Draft Environmental Impact Statement (DEIS) for the proposed project known as **Interstate 5 (I-5)/Cosumnes River Boulevard Interchange and Extention of the Cosumnes River Boulevard to Franklin Boulevard, Sacramento County, California**. Our comments are provided pursuant to the National Environmental Policy Act (NEPA), Council on Environmental Quality (CEQ) regulations [40 CFR §1500-1508] and Section 309 of the Clean Air Act.

The FHWA, in cooperation with the City of Sacramento and the California Department of Transportation (Caltrans), intends to prepare a DEIS based on a proposal by the City of Sacramento to extend Cosumnes River Boulevard from its current westerly terminus at Franklin Boulevard to an interchange with I-5 and potentially farther west to Freeport Boulevard (State Route 160). Alternatives under consideration include: (1) taking no action, (2) constructing Cosumnes River Boulevard from Franklin Boulevard west to I-5 with an interchange at I-5, and (3) constructing Cosumnes River Boulevard from Franklin Boulevard west across I-5 toward the Sacramento River to Freeport Boulevard with and interchange at I-5. Two alternative alignments are proposed for the Cosumnes River Boulevard connection between Franklin Boulevard and the proposed I-5 interchange.

EPA would like to offer scoping comments on the following topics: 1) purpose and need; 2) range of alternatives; 3) impacts to Waters of the United States; 4) impacts to threatened and endangered species; 6) growth-inducing impacts; and 7) cumulative impacts. Our detailed comments are attached.

Thank you for this opportunity to comment. When the Draft EIS is complete, please send two copies to the address above (mail code: CMD-2) at the same time it is sent to EPA

Headquarters. If you have any questions or comments, please feel free to contact me at 415-972-3848 or levin.nancy@epa.gov.

Sincerely,

Nancy Levin, NEPA Reviewer
Federal Activities Office

Attachments: Detailed comments on NOI

cc: Grace Hovey, City of Sacramento Planning and Building Department
Patrick McAchren, Caltrans District 3

U.S. EPA Detailed Comments: I-5/Cosumnes River Boulevard Interchange
March 12, 2002

Purpose and Need

EPA considers a clear purpose and need statement to be fundamental to a well-prepared Environmental Impact Statement (EIS). The purpose and need statement provides the basis for the determining the range of alternatives.

Need

The project need can be thought of as the problem to be solved. In considering the project need, it may be useful to address the following three questions:

Why?	State the basic rationale behind the proposed action. Identify the problem in terms of existing or forecast deficiencies in traffic safety or capacity. Explain what facts, data, and other information support this identified deficiency.
Why here?	Relate the geographic scope of the project to the problem or deficiency. Identify the project's "independent utility" and "logical termini."
Why now?	Explain the urgency of the problem, and what might happen if the problem were not addressed at this time. Address the timeline of the proposed action.

Purpose

The project purpose can be thought of as how the proposed action will meet the need (i.e., solve the problem). The project purpose should be broad enough so as not to prematurely eliminate reasonable alternatives from further consideration..

If one purpose of the project is to provide access to and facilitate development of currently inaccessible land on either side of I-5 in the study area, the need for access should be articulated and discussed, and the impacts of potential development (planned and unplanned) facilitated by the project should be analyzed in the Draft Environmental Impact Statement (DEIS).

Alternatives

The Council of Environmental Quality (CEQ) guidelines implementing the National Environmental Policy Act (NEPA) require that the lead agency "rigorously explore and objectively evaluate all reasonable alternatives" [40 CFR §1502.14(a)].

If there are reasonable alternatives that meet the project's purpose and need and do not require the construction of new roadway, they should be explored. For example, since other east-west connectors between SR 99 and I-5 already exist, is it possible to upgrade or widen them to meet future traffic demand?

Recommendations

- Discuss all reasonable alternatives for an east-west connection between SR 99 and I-5.
- Include the right of way required for each alternative.
- Explore transit alternatives and Transportation System Management (TSM) alternatives.

Impacts to Waters of the U.S.
The project area includes Morrison and Union House Creeks, freshwater marsh, and seasonal emergent wetlands. The DEIS should disclose potential impacts to Waters of the U.S. that may occur during construction and operation of the proposed project. The potential for soil erosion, bank destabilization and stormwater runoff during construction and operation should be addressed.

If the project requires a Section 404 Individual permit from the U.S. Army Corps of Engineers (Corps), Federal Highway Administration (FHWA) and Caltrans should consider initiating interagency review through the NEPA/Clean Water Act Section 404 Integration Process Memorandum of Understanding (NEPA/404 MOU) and to consult with EPA on this issue.

We urge FHWA, in planning and designing the footprint of the project to, first, avoid, and then, minimize, direct and indirect impacts to water resources as much as practicable. Where avoidance or minimization is not feasible, potential compensatory mitigation measures to offset these impacts should be identified. While the DEIS need not include fully detailed mitigation plans, it should identify areas that could serve as sites for mitigation and describe the type of mitigation planned.

Recommendations

- Disclose potential impacts to Waters of the U.S.
- Determine whether or not to initiate interagency review through the NEPA/404 MOU.
- First avoid, then minimize impacts to waters of the U.S. Where avoidance or minimization is not possible, identify potential mitigation measures.

Endangered Species
The project area includes threatened and endangered species. The proposed project is located near the Stone Lakes National Wildlife Refuge.

Recommendations:

- Identify all petitioned and listed threatened and endangered species and critical habitat within the project area.
- Assess which species or critical habitat might be directly or indirectly affected by each alternative.
- Identify the timeline and procedures FHWA intends to follow to fulfill its obligation under Section 7 of the Endangered Species Act.
- Analyze the potential impacts of the project (construction and operation) and the development it facilitates on the Stone Lakes National Wildlife Refuge.

Induced Growth and Indirect Impacts
The proposed project will involve construction of a new interchange and a new roadway. Project features such as these, especially in undeveloped areas, are often associated with induced growth.

The DEIS should disclose the potential growth-inducing impacts of the proposed action [40 CFR §1508.8(b)]. The project also may include encroachment on the Sacramento Regional Sanitation District (SRSD) "buffer zone" between the wastewater treatment plant and surrounding properties.

Recommendations:

- Analyze growth-inducing impacts of the proposed project.
- Identify current zoning and trends in changing land use patterns in assessing the potential for induced growth.
- Discuss the impacts of the partial loss of the SRSD buffer zone.

Cumulative Impacts

Under NEPA, a cumulative impact is "...the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time." [40 CFR §1508.7].

The cumulative impacts analysis in the DEIS should do more than list and describe other transportation and construction projects in the area. It should analyze the cumulative impacts of the projects on resources of concern. At this time, resources of concern appear to be Waters of the U.S.; and threatened and endangered species and their critical habitat.

The DEIS should describe the methodology used to assess cumulative project impacts. Guidance on how to perform cumulative impacts has been published by both the CEQ (http://ceq.eh.doe.gov/nepa/nepanet.htm) and EPA (http://es.epa.gov/oeca/ofa/cumula.html). In addition to these documents, we suggest that FHWA consider using the following guidelines to address cumulative impacts:

- Identify resources of concern and appropriate cumulative impacts study areas.
- Identify *all* other on-going, planned, and reasonably foreseeable projects in the study area, not just transportation projects, that may contribute to cumulative impacts. Where studies exist on the environmental impacts of these other projects, use these studies as a source for quantifying cumulative impacts.
- Perform a cumulative impacts analysis on only those resources of concern that are significantly impacted or those that affect the broader ecosystem.
- Include a baseline and explain why that baseline was selected.
- When cumulative impacts occur, and mitigation is proposed, clearly state the lead agency's and other agencies' mitigation responsibilities.

Air Quality Impacts

The proposed project is currently in a nonattainment area for ozone and particulate matter less than ten microns in diameter (PM10). The DEIS should contain a qualitative project-level PM10 analysis. In addition, the DEIS should demonstrate that the proposed project is part of a conforming Transportation Plan and Transportation Improvement Program (TIP).

Recommendations

- The project should be included in a conforming Transportation Plan and TIP before the NEPA process is completed.
- The DEIS should evaluate the project level PM10 impacts using a qualitative analysis [40 CFR 93.123].
- In the "Affected Environment" chapter, include a discussion of the new eight-hour ozone standard, as well as the new PM2.5 standard. To the extent that monitoring data is available on these two criteria pollutants, include that information in the DEIS.
- Evaluate air quality impacts from construction, including: (1) length of construction period; and (2) any major traffic diversions and associated congestion.
- Identify sensitive receptors in or near the project area, such as children, elderly, infirm, and athletes, and schedule construction to minimize impact to these populations.
- Implement comprehensive mitigation measures to minimize these effects.

Invasive Species and Landscaping

Executive Order 13112 on Invasive Species calls for the restoration of native plant and tree species.

Recommendations

- If the proposed project will entail new landscaping, the DEIS should describe how the project will meet the requirements of Executive Order 13112.
- To avoid the need for irrigation, EPA strongly encourages FHWA to plant drought-resistant plants at any new public facilities and in landscaping.

Environmental Justice

Executive Order 12898 on Environmental Justice addresses disproportionate adverse impacts of federal actions on minority and low-income populations.

Recommendations

- Identify minority and low-income populations, and address whether the alternatives would cause a disproportionate adverse impact.
- Explore potential mitigation measures for any adverse environmental justice effects, such as displacement or community disruption.

Pollution Prevention

The Resource Conservation & Recovery Act (RCRA) Section 6002 requires federal, state, local agencies, and their contractors that use appropriated federal funds, to purchase EPA-designated recycled materials, including EPA-designated transportation, construction, and landscaping products. In addition, EPA supports deconstruction and materials reuse in projects where existing structures are removed.

Recommendations

- Commit to materials reuse, where appropriate and feasible, and include a commitment to the Buy-Recycled requirements. For further details, please see EPA's web site at http://www.epa.gov/cpg, as well as attached materials on Buy-Recycled and Construction Waste Management.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX
75 Hawthorne Street
San Francisco, CA 94105-3901

March 18, 2002

RECEIVED
MAR 26 2002
PLANNING DEPARTMENT

Michael G. Ritchie
Federal Highway Administration
980 Ninth Street
Suite 400
Sacramento, CA 95814-2724

Dear Mr. Ritchie:

In a letter dated February 6, 2002, you invited EPA's recommendation about whether to initiate the National Environmental Policy Act/Clean Water Act Section 404 Integration Process Memorandum of Understanding (NEPA/404 MOU) for the **Interstate 5/Cosumnes River Boulevard Interchange and Extension of the Cosumnes River Boulevard to Franklin Boulevard, Sacramento County, California** project. You also provided background information about the proposed project. After reviewing the information provided, it appears that the proposed project will have less than 1.5 acres of wetlands impacts, and that an individual Section 404 permit from the U.S. Army Corps of Engineers will not be sought. If this is the case, we do not believe that the NEPA/404 MOU process is warranted.

Our input on the project's Purpose and Need, Range of Alternatives and Screening Criteria is reflected in the EPA scoping letter (March 12, 2002) responding to the Federal Highway Administration's Notice of Intent (February 11, 2002) to prepare an environmental impact statement for this project.

Thank you for the opportunity to comment and for providing information on the project. If you have any further questions, please feel free to contact me at 415-972-3848 or levin.nancy@epa.gov.

Sincerely,

Nancy Levin
Federal Activities Office

cc: R.C. Slovensky, FHWA
Grace Hovey, City of Sacramento Planning and Building Department
Patrick McAchren, Caltrans District 3

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DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
CORPS OF ENGINEERS
1325 J STREET
SACRAMENTO, CALIFORNIA 95814-2922

REPLY TO
ATTENTION OF

April 29, 2002

Regulatory Branch (200200089)

3 - 2002

PLANNING DEPART

Grace Hovey
City of Sacramento
Planning and Building Department
1231 I Street, Room 300
Sacramento, California 95814-3699

Dear Ms. Hovey:

I am responding to your request for comments regarding the proposed I-5/Cosumnes River Boulevard Interchange project. This project is located between Franklin Boulevard and Freeport Boulevard, in South Sacramento, California.

The Corps of Engineers' jurisdiction within the study area is under the authority of Section 404 of the Clean Water Act for the discharge of dredged or fill material into waters of the United States. Waters of the United States include, but are not limited to, rivers, perennial or intermittent streams, lakes, ponds, wetlands, vernal pools, marshes, wet meadows, and seeps. Project features that result in the discharge of dredged or fill material into waters of the United States will require Department of the Army authorization prior to starting work.

We recommend that a wetland delineation for the entire plan area be submitted to this office for verification. This would minimize inconsistencies and potential conflicts, and would facilitate and streamline comprehensive environmental review and permitting.

The range of alternatives considered should include alternatives that avoid impacts to wetlands or other waters of the United States. Every effort should be made to avoid project features which require the discharge of dredged or fill material into waters of the United States. In the event it can be clearly demonstrated there are no practicable alternatives to filling waters of the United States, mitigation plans should be developed to compensate for the unavoidable losses resulting from project implementation.

Please refer to identification number 200200089 in any correspondence concerning this project. If you have any questions, please write to Mr. Justin Cutler at the letterhead address, or email Justin.Cutler@usace.army.mil, or telephone 916-557-5258.

Sincerely,

Michael Finan
Chief, Delta Office

Copy Furnished:

R.C. Slovensky, U.S. Department of Transportation, 980 Ninth Street, Suite 400, Sacramento, California 95814-2724

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

IN REPLY REFER TO:
PPN 2920

March 27, 2002

RECEIVED
APR 1 2002
PLANNING DEPARTMENT

Ms. Grace Hovey, Associate Planner
City of Sacramento, Planning Division
1231 I Street, Room 300
Sacramento, California 95814

Dear Ms. Hovey:

Thank you for the opportunity to review the Notice of Intent to prepare an Environmental Impact Statement/Environmental Impact Report for the Interstate 5/Cosumnes River Boulevard Interchange Project in the City of Sacramento, California. The enclosures are intended to assist you in your continued environmental review of this proposal. Future consultation with the U.S. Fish and Wildlife Service (Service) may be required under the Fish and Wildlife Coordination Act if project activities are anticipated to impact jurisdictional wetlands, and/or the Endangered Species Act if project activities are anticipated to affect federally listed species.

Enclosure A provides a list of sensitive species that may occur in or near the project site. The Service recommends that surveys be completed by a qualified biologist on the proposed project site to confirm the presence or absence of special-status species or their habitats. Enclosure B recommends general guidelines for identifying and mitigating project impacts to fish, wildlife, and their habitats. The Council on Environmental Quality developed regulations for implementing the National Environmental Policy Act, and defines mitigation to include: (1) avoiding the impact; (2) minimizing the impact; (3) rectifying the impact; (4) reducing or eliminating the impact over time; and (5) compensating for impacts. The Service supports and adopts this definition of mitigation and considers the specific elements to represent the desirable sequence of steps in the mitigation planning process. Accordingly, we maintain the best way to mitigate adverse biological impacts is avoidance when at all possible.

We encourage you to use these guidelines to develop a comprehensive environmental document that addresses these needs. If you have any questions regarding these comments, please contact Jerry Bielfeldt (Watershed Planning Branch) in the Sacramento Fish and Wildlife Office, at (916) 414-6584.

Sincerely,

Michael B. Hoover

Michael B. Hoover
Acting Field Supervisor

Enclosures

cc:
AES, Portland, OR
RM, CDFG, Region 2, Rancho Cordova, CA (w/o enclosures)

U.S. FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

Phone: (916) 414-6600 / 6601
Fax: (916) 414-6712 / 6713

FAX TRANSMISSION COVER SHEET

Date: 4/5/02

To: GRACE HOVEY

Fax: (916) 264-7185

Re: Sp list Cosumnes River Blvd Interchange on I-5

Sender: JERRY BRECHEEN

Total Pages (Excl. Cover): 10

Sorry Grace -

attached is the correct sp. list.

Jerry

Endangered and Threatened Species that May Occur in
or be Affected by Projects in the Selected Quads Listed Below
Reference File No. 1-1-02-SP-1364
I-5/Cosumnes River Blvd Interchange, Sacramento
April 5, 2002

QUAD: 496B FLORIN

Listed Species

Mammals

riparian (San Joaquin Valley) woodrat, *Neotoma fuscipes riparia* (E) *

riparian brush rabbit, *Sylvilagus bachmani riparius* (E) *

Birds

bald eagle, *Haliaeetus leucocephalus* (T)

Reptiles

giant garter snake, *Thamnophis gigas* (T)

Amphibians

California red-legged frog, *Rana aurora draytonii* (T)

Fish

Critical habitat, delta smelt, *Hypomesus transpacificus* (T)

delta smelt, *Hypomesus transpacificus* (T)

Central Valley steelhead, *Oncorhynchus mykiss* (T) NMFS

winter-run chinook salmon, *Oncorhynchus tshawytscha* (E) NMFS

Central Valley spring-run chinook salmon, *Oncorhynchus tshawytscha* (T) NMFS

Critical Habitat, Central Valley spring-run chinook, *Oncorhynchus tshawytscha* (T) NMFS

Sacramento splittail, *Pogonichthys macrolepidotus* (T)

Invertebrates

vernal pool fairy shrimp, *Branchinecta lynchi* (T)

valley elderberry longhorn beetle, *Desmocerus californicus dimorphus* (T)

vernal pool tadpole shrimp, *Lepidurus packardi* (E)

Proposed Species

Birds

mountain plover, *Charadrius montanus* (PT)

Candidate Species

Amphibians

California tiger salamander, *Ambystoma californiense* (C)

Fish

Central Valley fall/late fall-run chinook salmon, *Oncorhynchus tshawytscha* (C) NMFS

Critical habitat, Central Valley fall/late fall-run chinook, *Oncorhynchus tshawytscha* (C) NMFS

Species of Concern

Mammals

Pacific western big-eared bat, *Corynorhinus (=Plecotus) townsendii townsendii* (SC)
small-footed myotis bat, *Myotis ciliolabrum* (SC)
long-legged myotis bat, *Myotis volans* (SC)
Yuma myotis bat, *Myotis yumanensis* (SC)
San Joaquin pocket mouse, *Perognathus inornatus* (SC)

Birds

tricolored blackbird, *Agelaius tricolor* (SC)
grasshopper sparrow, *Ammodramus savannarum* (SC)
short-eared owl, *Asio flammeus* (SC)
western burrowing owl, *Athene cunicularia hypugaea* (SC)
oak titmouse, *Baeolophus inornatus* (SLC)
Aleutian Canada goose, *Branta canadensis leucopareia* (D)
Swainson's hawk, *Buteo Swainsoni* (CA)
ferruginous hawk, *Buteo regalis* (SC)
Lawrence's goldfinch, *Carduelis lawrencei* (SC)
Vaux's swift, *Chaetura vauxi* (SC)
black tern, *Chlidonias niger* (SC)
white-tailed (=black shouldered) kite, *Elanus leucurus* (SC)
little willow flycatcher, *Empidonax traillii brewsteri* (CA)
American peregrine falcon, *Falco peregrinus anatum* (D)
greater sandhill crane, *Grus canadensis tabida* (CA)
loggerhead shrike, *Lanius ludovicianus* (SC)
Lewis' woodpecker, *Melanerpes lewis* (SC)
long-billed curlew, *Numenius americanus* (SC)
Nuttall's woodpecker, *Picoides nuttallii* (SLC)
white-faced ibis, *Plegadis chihi* (SC)
bank swallow, *Riparia riparia* (CA)
rufous hummingbird, *Selasphorus rufus* (SC)

Reptiles

northwestern pond turtle, *Clemmys marmorata marmorata* (SC)
California horned lizard, *Phrynosoma coronatum frontale* (SC)

Amphibians

western spadefoot toad, *Spea hammondii* (SC)

Fish

green sturgeon, *Acipenser medirostris* (SC)
river lamprey, *Lampetra ayresi* (SC)
Kern brook lamprey, *Lampetra hubbsi* (SC)
Pacific lamprey, *Lampetra tridentata* (SC)
longfin smelt, *Spirinchus thaleichthys* (SC)

Invertebrates

Antioch Dunes anthicid beetle, *Anthicus antiochensis* (SC)
Sacramento anthicid beetle, *Anthicus sacramento* (SC)
Midvalley fairy shrimp, *Branchinecta mesovallensis* (SC)
California linderiella fairy shrimp, *Linderiella occidentalis* (SC)

Plants

legenere, *Legenere limosa* (SC)
valley sagittaria (=Sanford's arrowhead), *Sagittaria sanfordii* (SC)

QUAD: 497A CLARKSBURG

Listed Species

Mammals

riparian (San Joaquin Valley) woodrat, *Neotoma fuscipes riparia* (E) *
riparian brush rabbit, *Sylvilagus bachmani riparius* (E) *

Birds

bald eagle, *Haliaeetus leucocephalus* (T)

Reptiles

giant garter snake, *Thamnophis gigas* (T)

Amphibians

California red-legged frog, *Rana aurora draytonii* (T)

Fish

Critical habitat, delta smelt, *Hypomesus transpacificus* (T)
delta smelt, *Hypomesus transpacificus* (T)
Central Valley steelhead, *Oncorhynchus mykiss* (T) NMFS
Critical habitat, winter-run chinook salmon, *Oncorhynchus tshawytscha* (E) NMFS
winter-run chinook salmon, *Oncorhynchus tshawytscha* (E) NMFS
Central Valley spring-run chinook salmon, *Oncorhynchus tshawytscha* (T) NMFS
Critical Habitat, Central Valley spring-run chinook, *Oncorhynchus tshawytscha* (T) NMFS
Sacramento splittail, *Pogonichthys macrolepidotus* (T)

Invertebrates

Conservancy fairy shrimp, *Branchinecta conservatio* (E)
vernal pool fairy shrimp, *Branchinecta lynchi* (T)

valley elderberry longhorn beetle, *Desmocerus californicus dimorphus* (T)
vernal pool tadpole shrimp, *Lepidurus packardi* (E)

Proposed Species

Birds

mountain plover, *Charadrius montanus* (PT)

Candidate Species

Amphibians

California tiger salamander, *Ambystoma californiense* (C)

Fish

Central Valley fall/late fall-run chinook salmon, *Oncorhynchus tshawytscha* (C) NMFS

Critical habitat, Central Valley fall/late fall-run chinook, *Oncorhynchus tshawytscha* (C) NMFS

Species of Concern

Mammals

Pacific western big-eared bat, *Corynorhinus (=Plecotus) townsendii townsendii* (SC)

small-footed myotis bat, *Myotis ciliolabrum* (SC)

long-legged myotis bat, *Myotis volans* (SC)

Yuma myotis bat, *Myotis yumanensis* (SC)

San Joaquin pocket mouse, *Perognathus inornatus* (SC)

Birds

tricolored blackbird, *Agelaius tricolor* (SC)

grasshopper sparrow, *Ammodramus savannarum* (SC)

short-eared owl, *Asio flammeus* (SC)

western burrowing owl, *Athene cunicularia hypugaea* (SC)

oak titmouse, *Baeolophus inornatus* (SLC)

Aleutian Canada goose, *Branta canadensis leucopareia* (D)

Swainson's hawk, *Buteo Swainsoni* (CA)

ferruginous hawk, *Buteo regalis* (SC)

Lawrence's goldfinch, *Carduelis lawrencei* (SC)

Vaux's swift, *Chaetura vauxi* (SC)

black tern, *Chlidonias niger* (SC)

white-tailed (=black shouldered) kite, *Elanus leucurus* (SC)

little willow flycatcher, *Empidonax traillii brewsteri* (CA)

American peregrine falcon, *Falco peregrinus anatum* (D)

greater sandhill crane, *Grus canadensis tabida* (CA)

loggerhead shrike, *Lanius ludovicianus* (SC)

Lewis' woodpecker, *Melanerpes lewis* (SC)
long-billed curlew, *Numenius americanus* (SC)
Nuttall's woodpecker, *Picoides nuttallii* (SLC)
white-faced ibis, *Plegadis chihi* (SC)
bank swallow, *Riparia riparia* (CA)
rufous hummingbird, *Selasphorus rufus* (SC)

Reptiles

northwestern pond turtle, *Clemmys marmorata marmorata* (SC)
California horned lizard, *Phrynosoma coronatum frontale* (SC)

Amphibians

western spadefoot toad, *Spea hammondii* (SC)

Fish

green sturgeon, *Acipenser medirostris* (SC)
river lamprey, *Lampetra ayresi* (SC)
Pacific lamprey, *Lampetra tridentata* (SC)
longfin smelt, *Spirinchus thaleichthys* (SC)

Invertebrates

Antioch Dunes anthicid beetle, *Anthicus antiochensis* (SC)
Sacramento anthicid beetle, *Anthicus sacramento* (SC)
Midvalley fairy shrimp, *Branchinecta mesovallensis* (SC)
California linderiella fairy shrimp, *Linderiella occidentalis* (SC)

KEY:

(E)	*Endangered*	Listed (in the Federal Register) as being in danger of extinction.
(T)	*Threatened*	Listed as likely to become endangered within the foreseeable future.
(P)	*Proposed*	Officially proposed (in the Federal Register) for listing as endangered or threatened.
(PX)	*Proposed Critical Habitat*	Proposed as an area essential to the conservation of the species.
(C)	*Candidate*	Candidate to become a *proposed* species.
(SC)	*Species of Concern*	May be endangered or threatened. Not enough biological information has been gathered to support listing at this time.
(SLC)	*Species of Local Concern*	Species of local or regional concern or conservation significance.
(MB)	*Migratory Bird*	Migratory bird
NMFS	NMFS species	Under the jurisdiction of the National Marine Fisheries Service. Contact them directly.
(D)	*Delisted*	Delisted. Status to be monitored for 5 years.
(CA)	*State-Listed*	Listed as threatened or endangered by the State of California.
(*)	*Extirpated*	Possibly extirpated from this quad.
(**)	*Extinct*	Possibly extinct.
	Critical Habitat	Area essential to the conservation of a species.

Endangered and Threatened Species that May Occur in or be Affected by
Projects in the Area of the Following California Counties
Reference File No. 1-1-02-SP-1364
April 5, 2002

SACRAMENTO COUNTY

Listed Species

Mammals

riparian (San Joaquin Valley) woodrat, *Neotoma fuscipes riparia* (E) *

Birds

bald eagle, *Haliaeetus leucocephalus* (T)

Reptiles

giant garter snake, *Thamnophis gigas* (T)

Amphibians

California red-legged frog, *Rana aurora draytonii* (T)

Fish

Central Valley spring-run chinook salmon, *Oncorhynchus tshawytscha* (T) NMFS
Central Valley steelhead, *Oncorhynchus mykiss* (T) NMFS
Critical Habitat, Central Valley spring-run chinook, *Oncorhynchus tshawytscha* (T) NMFS
Critical habitat, Central Valley steelhead, *Oncorhynchus mykiss* (T) NMFS
Critical habitat, delta smelt, *Hypomesus transpacificus* (T)
Critical habitat, winter-run chinook salmon, *Oncorhynchus tshawytscha* (E) NMFS
Sacramento splittail, *Pogonichthys macrolepidotus* (T)
delta smelt, *Hypomesus transpacificus* (T)
winter-run chinook salmon, *Oncorhynchus tshawytscha* (E) NMFS

Invertebrates

Conservancy fairy shrimp, *Branchinecta conservatio* (E)
Critical habitat, valley elderberry longhorn beetle, *Desmocerus californicus dimorphus* (T)
delta green ground beetle, *Elaphrus viridis* (T)
valley elderberry longhorn beetle, *Desmocerus californicus dimorphus* (T)
vernal pool fairy shrimp, *Branchinecta lynchi* (T)
vernal pool tadpole shrimp, *Lepidurus packardi* (E)

Plants

Antioch Dunes evening-primrose, *Oenothera deltoides ssp. howellii* (E)
Sacramento Orcutt grass, *Orcuttia viscida* (E)
slender Orcutt grass, *Orcuttia tenuis* (T)
soft bird's-beak, *Cordylanthus mollis ssp. mollis* (E) *

Proposed Species

Birds

mountain plover, *Charadrius montanus* (PT)

Candidate Species

Birds

Western yellow-billed cuckoo, *Coccyzus americanus occidentalis* (C)

Amphibians

California tiger salamander, *Ambystoma californiense* (C)

Fish

Central Valley fall/late fall-run chinook salmon, *Oncorhynchus tshawytscha* (C) NMFS

Critical habitat, Central Valley fall/late fall-run chinook, *Oncorhynchus tshawytscha* (C) NMFS

Species of Concern

Mammals

Pacific western big-eared bat, *Corynorhinus (=Plecotus) townsendii townsendii* (SC)

San Francisco dusky-footed woodrat, *Neotoma fuscipes annectens* (SC)

San Joaquin pocket mouse, *Perognathus inornatus* (SC)

Yuma myotis bat, *Myotis yumanensis* (SC)

fringed myotis bat, *Myotis thysanodes* (SC)

greater western mastiff-bat, *Eumops perotis californicus* (SC)

long-eared myotis bat, *Myotis evotis* (SC)

long-legged myotis bat, *Myotis volans* (SC)

pale Townsend's big-eared bat, *Corynorhinus (=Plecotus) townsendii pallescens* (SC)

small-footed myotis bat, *Myotis ciliolabrum* (SC)

Birds

Aleutian Canada goose, *Branta canadensis leucopareia* (D)

American bittern, *Botaurus lentiginosus* (SC)

American peregrine falcon, *Falco peregrinus anatum* (D)

Brewer's sparrow, *Spizella breweri* (SC)

California thrasher, *Toxostoma redivivum* (SC)

Lawrence's goldfinch, *Carduelis lawrencei* (SC)

Lewis' woodpecker, *Melanerpes lewis* (SC)

Nuttall's woodpecker, *Picoides nuttallii* (SLC)

Snowy Egret, *Egretta thula* (MB)

Swainson's hawk, *Buteo Swainsoni* (CA)

bank swallow, *Riparia riparia* (CA)

black rail, *Laterallus jamaicensis coturniculus* (CA)

black tern, *Chlidonias niger* (SC)
common loon, *Gavia immer* (SC)
ferruginous hawk, *Buteo regalis* (SC)
grasshopper sparrow, *Ammodramus savannarum* (SC)
greater sandhill crane, *Grus canadensis tabida* (CA)
little willow flycatcher, *Empidonax traillii brewsteri* (CA)
loggerhead shrike, *Lanius ludovicianus* (SC)
long-billed curlew, *Numenius americanus* (SC)
oak titmouse, *Baeolophus inornatus* (SLC)
rufous hummingbird, *Selasphorus rufus* (SC)
short-eared owl, *Asio flammeus* (SC)
tricolored blackbird, *Agelaius tricolor* (SC)
western burrowing ow , *Athene cunicularia hypugaea* (SC)
white-faced ibis, *Plegadis chihi* (SC)
white-tailed (=black shouldered) kite, *Elanus leucurus* (SC)

Reptiles

California horned lizard, *Phrynosoma coronatum frontale* (SC)
northwestern pond turtle, *Clemmys marmorata marmorata* (SC)
silvery legless lizard, *Anniella pulchra pulchra* (SC)
southwestern pond turtle, *Clemmys marmorata pallida* (SC)

Amphibians

foothill yellow-legged frog, *Rana boylii* (SC)
western spadefoot toad, *Spea hammondii* (SC)

Fish

Kern brook lamprey, *Lampetra hubbsi* (SC)
Pacific lamprey, *Lampetra tridentata* (SC)
green sturgeon, *Acipenser medirostris* (SC)
longfin smelt, *Spirinchus thaleichthys* (SC)
river lamprey, *Lampetra ayresi* (SC)

Invertebrates

Antioch Dunes anthicid beetle, *Anthicus antiochensis* (SC)
California linderiella fairy shrimp, *Linderiella occidentalis* (SC)
Midvalley fairy shrimp, *Branchinecta mesovallensis* (SC)
Sacramento anthicid beetle, *Anthicus sacramento* (SC)
San Joaquin dune beetle, *Coelus gracilis* (SC)
curved-foot hygrotus diving beetle, *Hygrotus curvipes* (SC)

Plants

Ahart's (dwarf) rush, *Juncus leiospermus var. ahartii* (SC)
Amador (Bisbee Peak) rush-rose, *Helianthemum suffrutescens* (SLC)
Boggs Lake hedge-hyssop, *Gratiola heterosepala* (CA)
Mason's lilaeopsis, *Lilaeopsis masonii* (SC)
Northern California black walnut, *Juglans californica var. hindsii* (SC) *
Red Bluff (dwarf) rush, *Juncus leiospermus var. leiospermus* (SC)
San Joaquin spearscale (=saltbush), *Atriplex joaquiniana* (SC)
Suisun Marsh aster, *Aster lentus* (SC)
Tuolumne coyote-thistle (=button-celery), *Eryngium pinnatisectum* (SC)
delta tule-pea, *Lathyrus jepsonii var. jepsonii* (SC)
legenere, *Legenere limosa* (SC)
pincushion navarretia, *Navarretia myersii spp. myersii* (SC)
stinkbells, *Fritillaria agrestis* (SLC)
valley sagittaria (=Sanford's arrowhead), *Sagittaria sanfordii* (SC)

KEY:

(E)	*Endangered*	Listed (in the Federal Register) as being in danger of extinction.
(T)	*Threatened*	Listed as likely to become endangered within the foreseeable future.
(P)	*Proposed*	Officially proposed (in the Federal Register) for listing as endangered or threatened.
(PX)	*Proposed Critical Habitat*	Proposed as an area essential to the conservation of the species.
(C)	*Candidate*	Candidate to become a *proposed* species.
(SC)	*Species of Concern*	Other species of concern to the Service.
(SLC)	*Species of Local Concern*	Species of local or regional concern or conservation significance.
(D)	*Delisted*	Delisted. Status to be monitored for 5 years.
(CA)	*State-Listed*	Listed as threatened or endangered by the State of California.
NMFS	NMFS species	Under jurisdiction of the National Marine Fisheries Service. Contact them directly.
*	*Extirpated*	Possibly extirpated from the area.
**	*Extinct*	Possibly extinct
	Critical Habitat	Area essential to the conservation of a species.

STATE OF CALIFORNIA -- THE RESOURCES AGENCY

GRAY DAVIS, *Governor*

DEPARTMENT OF WATER RESOURCES
1416 NINTH STREET, P.O. BOX 942836
SACRAMENTO, CA 94236-0001
(916) 653-5791

APR 10 2002

RECEIVED
APR 12 2002
PLANNING DEPARTMENT

City Sacramento Planning and Building Development
Ms. Grace Hovey, Associate Planner
1231 I Street Room 300
Sacramento, California 95814

Dear Ms: Hovey

Staff for the Department of Water Resources has reviewed State Clearinghouse Document 2002022072 and has the following comments:

A portion of the project under consideration is within the Morrison Creek Flood Control Project, and is within the jurisdiction, and under the authority of The Reclamation Board. The California Code of Regulations, Title 23, Waters, Article 3, require that a Board permit be obtained before the start of any work including excavation and construction activities within any channel, levee, floodway or within an easement where The Reclamation Board has jurisdiction.

If you have any questions, please call me at (916) 653-9900, or Samuel Brandon of my staff, at (916) 653-6491.

Sincerely,

FOK

Nader Noori, Chief
Floodway Protection Section

California Regional Water Quality Control Board

Central Valley Region

Robert Schneider, Chair

Winston H. Hickox
Secretary for Environmental Protection

Gray Davis
Governor

Sacramento Main Office
Internet Address: http://www.swrcb.ca.gov/rwqcb5
3443 Routier Road, Suite A, Sacramento, California 95827-3003
Phone (916) 255-3000 • FAX (916) 255-3015

2 April 2002

RECEIVED
APR 1 4 2002
PLANNING DEPARTMENT

Ms. Grace Hovey
City of Sacramento
Planning and Building Department
Planning Division
1231 I Street, Room 300
Sacramento, California 95814

PROPOSED PROJECT REVIEW, CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA), NOTICE OF PREPARATION OF AN EIR FOR INTERSTATE 5/COSUMNES RIVER BOULEVARD INTERCHANGE PROJECT, SACRAMENTO, SACRAMENTO COUNTY

We have reviewed the Notice of Preparation for the Interstate 5/Cosumnes River Boulevard project. Based on our review, we have the following comments regarding the proposed project.

Storm Water

The proponent is required to file for a NPDES General Permit for Storm Water Discharges Associated with Construction Activities, NPDES No. CAS000002, Order No. 99-28-DWQ (General Permit). The General Permit is required when a site involves clearing, grading, disturbances to the ground, such as stockpiling, or excavation that results in soil disturbances of at least five acres of total land area. Construction activity that involves soil disturbances on construction sites of less than five acres and is part of a larger common plan of development or sale, also requires a permit. The General Permit must be obtained prior to construction. Failure to obtain a permit may result in an enforcement action.

In addition, the proponent must develop and implement a Storm Water Pollution Prevention Plan (SWPPP) prior to construction. The SWPPP is an important resource and serves as a field directive to appropriately select, correctly install and maintain pollution prevention Best Management Practices (BMPs). The BMPs used during construction must be an effective combination of erosion and sediment controls (i.e. erosion control blankets, fiber rolls, and sediment traps).

Wetlands and/or stream course alteration

If the proponent impacts waters of the State (such as streams and wetlands) they must file a 401 Water Quality Certification application with this office pursuant to Section 401 of the federal Clean Water Act. The proponent must certify the project will not violate state water quality standards. Projects include, but are not limited to, stream crossings, modification of stream banks or stream courses, and the filling or modification of wetlands. If a U.S. Army Corp of Engineers (ACOE) permit is required for the project, then Water Quality Certification must be obtained prior to initiation of project activities. The proponent must follow the ACOE 404(b)(1) Guidance to assure approval of their 401 Water Quality Certification application. The guidelines are as follows:

1. **Avoidance** (Is the project the least environmentally damaging *practicable* alternative?)
2. **Minimization** (Does the project minimize any adverse effects to the impacted wetlands)
3. **Mitigation** (Does the project mitigate to assure a no net loss of functional values?)

If, after avoidance and minimization guidelines are considered and wetland impacts are still anticipated:

- determine functional losses and gains (both permanent and temporal; both direct and indirect)
- conduct adequate baselines of wetland functions including vegetation, wildlife, hydrology, soils, and water quality
- attempt to create/restore the same wetland type that is impacted, in the same watershed
- work with a regional context to maximize benefits for native fish, wildlife, vegetation, as well as for water quality, and hydrology
- use native species and materials whenever possible
- document all efforts made to avoid the minimize adverse wetland impacts
- be prepared to develop performance criteria and to track those for between 5 to 20 years
- be prepared to show project success based on achieving wetland functions
- if the project fails, be prepared to repeat the same process (via financial assurance), with additional acreage added for temporal losses
- specify how the mitigation project will be maintained in perpetuity and who will be responsible for the maintenance

If the project includes in-stream construction such as dredging, rip rap installation, or the construction of piers or bridge footings, then the proponent is required to comply with the following:

1. The Discharger shall notify the Board in writing of the start of any in-water activities.

2. Except for activities permitted by the U.S. Army Corps under §404 of the Clean Water Act, soil, silt, or other organic materials shall not be placed where such materials could pass into surface water or surface water drainage courses.

3. The discharge of petroleum products or other excavated materials to surface waters is prohibited.

4. Activities shall not cause turbidity increases in surface waters to exceed:

   (a) where natural turbidity is between 0 and 5 Nephelometric Turbidity Units (NTUs), increases shall not exceed 1 NTU;
   (b) where natural turbidity is between 5 and 50 NTUs, increases shall not exceed 20 percent;
   (c) where natural turbidity is between 50 and 100 NTUs, increase shall not exceed 10 NTUs;
   (d) where natural turbidity is greater than 100 NTUs, increases shall not exceed 10 percent.

   Except that these limits will be eased during in-water working periods to allow a turbidity increase of 15 NTU over background turbidity as measured in surface waters 300 feet downstream from the working area. In determining compliance with the above limits, appropriate averaging periods may be applied provided that beneficial uses will be fully protected.

5. Activities shall not cause settleable matter to exceed 0.1 ml/l in surface waters as measured in surface waters 300 feet downstream from the project.

6. Activities shall not cause visible oil, grease, or foam in the work area or downstream.

7. All areas disturbed by project activities shall be protected from washout or erosion.

8. In the event that project activities result in the deposition of soil materials or creation of a visible plume in surface waters, the following monitoring shall be conducted immediately upstream and 300 feet downstream of the work site and the results reported to this office within two weeks:

Parameter	*Unit*	*Type of Sample*	*Frequency of Sample*
Turbidity	NTU	**Grab**	Every 4 hours during in water work
Settleable Material	ml/l	**Grab**	Same as above.

9. The Discharger shall notify the Board immediately if the above criteria for turbidity, settleable matter, oil/grease, or foam are exceeded.

10. The Discharger shall notify the Board immediately of any spill of petroleum products or other organic or earthen materials.

11. The Discharger shall comply with all Department of Fish and Game 1600 requirements for the project.

For more information, please visit our storm water website at: http://www.swrcb.ca.gov/stormwtr or if you have any questions regarding the above information, please contact Brett Stevens at (916) 255-3442.

CHRISTINE RALISOC
Environmental Scientist
Storm Water Unit

SRCSD

Wastewater Treatment

10545 Armstrong Avenue
Mather
California
95655
Tele: [916] 876-6000
Fax: [916] 876-6160
Website: www.srcsd.com

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Collection Systems Manager

Stan R. Dean
Plant Manager

March 20, 2002
E225.000

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MAR 26 2002
PLANNING

Grace Hovey
City of Sacramento, Planning
123 I Street, Room 300
Sacramento, CA 95814

Subject: **Notice of Preparation (NOP) of an EIR**
Interstate 5 - Cosumnes River Boulevard Interchange Project

Sacramento Regional County Sanitation District (SRCSD) has reviewed the subject documents. The project could potentially impact four existing sewer interceptors and one proposed interceptor. It also encroaches on existing developed bufferlands for the Sacramento Regional Wastewater Treatment Plant (SRWTP). Therefore, the EIR should address the following concerns:

Existing Facilities

- **City Interceptor.** This is a 96-inch diameter gravity sewer interceptor located just east of Interstate 5 and it serves central Sacramento. At this time SRCSD cannot support relocation of this line due to engineering, maintenance and structural concerns. The EIR must address the impacts of the overpass and the interchange ramps to SRCSD's requirements to maintain and operate this interceptor.
- **South East Trunk.** This is an existing 60-inch trunk line serving a portion of Southeast Sacramento. It is adjacent to the UPRR Railway in the area of the project. The EIR must address the impact of the UPRR overhead crossing to this line and what steps will be taken to protect the line.
- **Central Interceptor.** This is an existing 108-inch interceptor serving most of central and north Sacramento County. The EIR must address the impacts of the project on the SRCSD's requirements to maintain and operate this interceptor.
- **Bradshaw Interceptor.** SRCSD has recently constructed a new 120-inch interceptor line adjacent to the Central Interceptor. The EIR must address the impacts of the project on the SRCSD's requirements to maintain and operate this interceptor.

Future Facilities

- **Lower Northwest Interceptor.** As indicated in the NOP, SRCSD is in the process of designing the Lower Northwest Interceptor to serve West Sacramento and the Natomas Area in Northwest Sacramento. The EIR must address the impacts of the project on the SRCSD's requirements to construct, maintain and operate this interceptor.

technology in balance with nature

Bufferlands

Both the north alignment and the south alignment of the proposed project are shown to traverse a portion of the 2,650 Bufferlands that surround the SRWTP. In addition to providing a buffer between the SRWTP operations and the neighboring community, one of the SRCSD's principal management objectives for the Bufferlands is to provide and maintain extensive areas of open space, high-quality wildlife habitat, and other valuable natural resources on the Bufferlands. The proposed project compromises this management objective. The south alignment presents a greater impact to this management objective than the north alignment. The EIR for this project should address this issue along with the many potential impacts to the abundant biological resources of the Bufferlands.

If you have any questions regarding these comments, please call me at 876-6094.

Very truly yours,

Jeff Atteberry, P. E.
Local Sewer Engineering

JA:sd

cc: Christoph Dobson
Patrick Schroeder
Bryan Young

hovey030202.ltr.205641

WARREN H. HARADA, Administrator
THOMAS J. ZLOTKOWSKI, Director, Department of Transportation

COUNTY OF SACRAMENTO
PUBLIC WORKS AGENCY

DEPARTMENT OF TRANSPORTATION
906 G Street, Suite 510
Sacramento, California 95814-1812
(916) 874-6291/5966 • Fax No. (916) 874-7831

March 19, 2002

Ms. Grace Hovey, Associate Planner
City of Sacramento Planning and Building Department
Planning Division
1231 I Street, Room 300
Sacramento, CA 95814

Subject: Notice of Preparation of a Draft Environmental Impact Statement/ Environmental Impact Report (EIS/EIR) – Interstate 5/Cosumnes River Boulevard Interchange Project

Dear Ms. Hovey:

The Sacramento County Department of Transportation has reviewed the NOP for the above-referenced project. We believe that the proposed I-5/Cosumnes River Boulevard Interchange, and the extension of Cosumnes River Boulevard westerly of Franklin Boulevard, could affect the traffic operation at the SR 99/Calvine Road interchange. Therefore, we request that the EIS/EIR analyzes the impacts of the proposed project on the SR 99/Calvine Road interchange.

If you have any questions please call me at 874-5966.

Sincerely,

Jeffrey E. Clark, P.E., T.E.
Senior Civil Engineer

JEC:ar

Regional Transit

Sacramento Regional Transit District
A Public Transit Agency and Equal Opportunity Employer

Mailing Address:
P.O. Box 2110
Sacramento, CA 95812-2110

Administrative Office:
1400 29th Street
Sacramento, CA 95816
(916) 321-2800
29th St. Light Rail Station/
Bus 36,38,50,67,68

Light Rail Office:
2700 Academy Way
Sacramento, CA 95815
(916) 648-8400

Public Transit Since 1973

April 25, 2002

Grace Hovey, Associate Planner
Planning Division
1231 I Street, Room 300
Sacramento, CA 95814

Subject: Notice of Preparation/ Notice of Intent (NOP/ NOI) for the Draft Environmental Impact Statement/ Report (EIS/R) for the Interstate 5/ Cosumnes River Boulevard Interchange and Roadway Extension Project.

Dear Ms. Hovey:

This is in response to the NOP/ NOI for the above referenced project. In that regard, the Sacramento Regional Transit District (RT) is pursuing the study of the South Line Phase 2 Light Rail Extension. This work was initiated with the identification of a Locally Preferred Alternative (LPA) light rail alignment extending south of the City of Sacramento to the Laguna and Elk Grove area.

Phase 1 of the extension is under construction from downtown Sacramento to Meadowview Road. The Phase 2 extension would continue south along the existing UPRR track alignment from Meadowview Road, run along Cosumnes River Boulevard (both existing and a portion of the proposed), then past Cosumnes River College, cross Highway 99 and end at Calvine Road and Auberry Drive (see Map 1, attached). A Final Environmental Impact Statement/Final Subsequent Environmental Impact Report was prepared for Phase 1 of the South Sacramento Corridor (from downtown Sacramento to the Meadowview Road) in February 1997. This document supplemented a 1994 Alternatives Analysis/Draft Environmental Impact Statement/Draft Environmental Impact Report (AA/DEIS/DEIR) for the entire LPA.

The work program for the current Phase 2 study will update the AA/DEIS/DEIR with a Supplemental EIS and a Subsequent EIR. The SEIS/R for Phase 2 is scheduled for circulation in the Fall of 2002.

In addition, the RT Board has adopted a 20-year Vision which, among other things, includes extending light rail further south along the UPRR tracks to Elk Grove Boulevard (See Map 2, attached).

We have and are participating in the monthly Cosumnes River Boulevard PDT meetings. We have participated in the March 14, 2002 project scoping meeting held at the Antioch Progressive Baptist Church in South Sacramento. We have also recently met with the project managers to discuss alignment issues.

There is limited right-of-way along Cosumnes River Boulevard which creates a number of engineering challenges related to the alignment of light rail as it relates both to the proposed widening, and extension of Cosumnes River Boulevard. We are working jointly to resolve the issues.

In addition, there are other competing existing and proposed projects and services located in that corridor that present development constraints. These include existing and proposed water and sewer lines, flood control measures, and electrical and gas lines.

The most significant environmental concerns that need full study and disclosure are related to: transportation and traffic, historic and cultural resources, hydrology and water quality, noise, agricultural resources, geology and soils, biological resources, public service and utilities and service systems.

We appreciate the coordination that has occurred so far, and look forward to a continued working relationship to ensure these projects are constructed to provide needed services to the community.

Please note that my telephone number is (916) 321-2992, and Don Smith, the Deputy Project Manager's telephone number is (916) 321-2957 if you would like to discuss this further.

Sincerely,

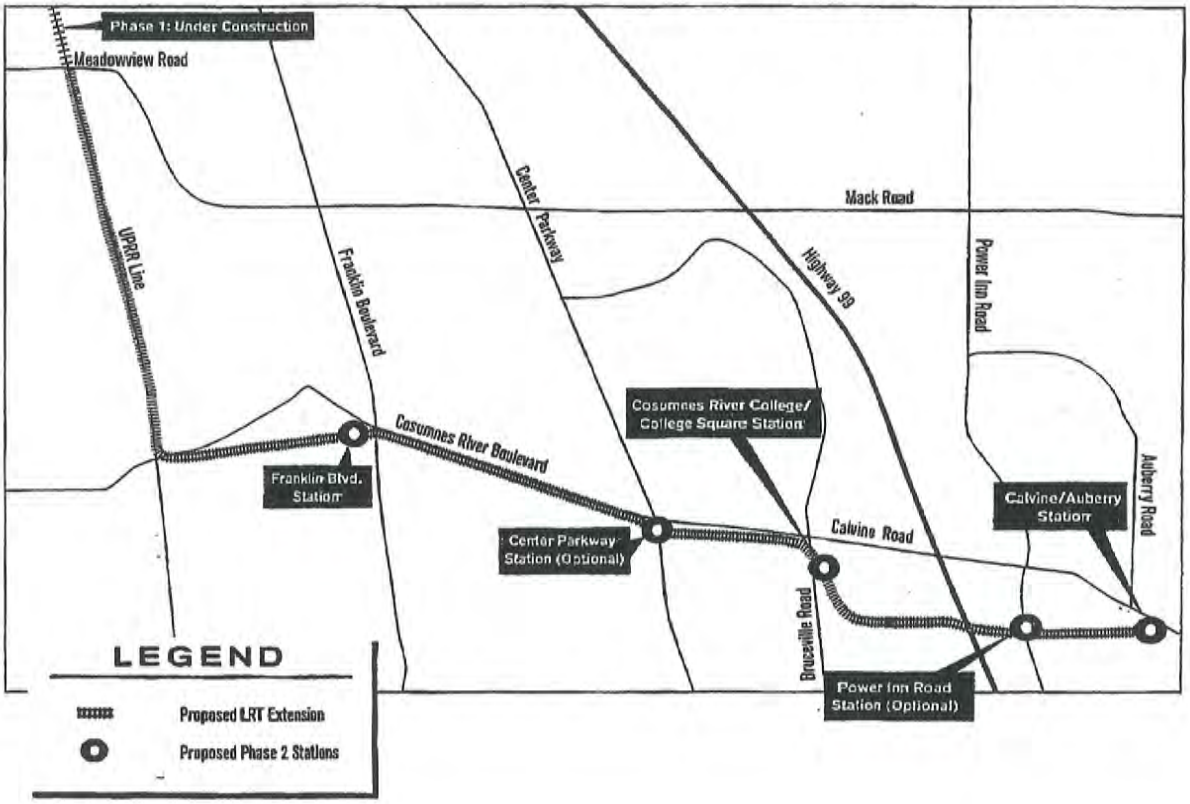
David M. Melko

David Melko, Policy and Program Manager
Project Manager, South Line Phase 2 Light Rail Extension Study

cc: Dave Mansen, Parsons Transportation Group
Azadeh Doherty, RT Planning Manager
Taiwo Jaiyeoba, RT Senior Planner
Don Smith, RT Senior Administrative Analyst

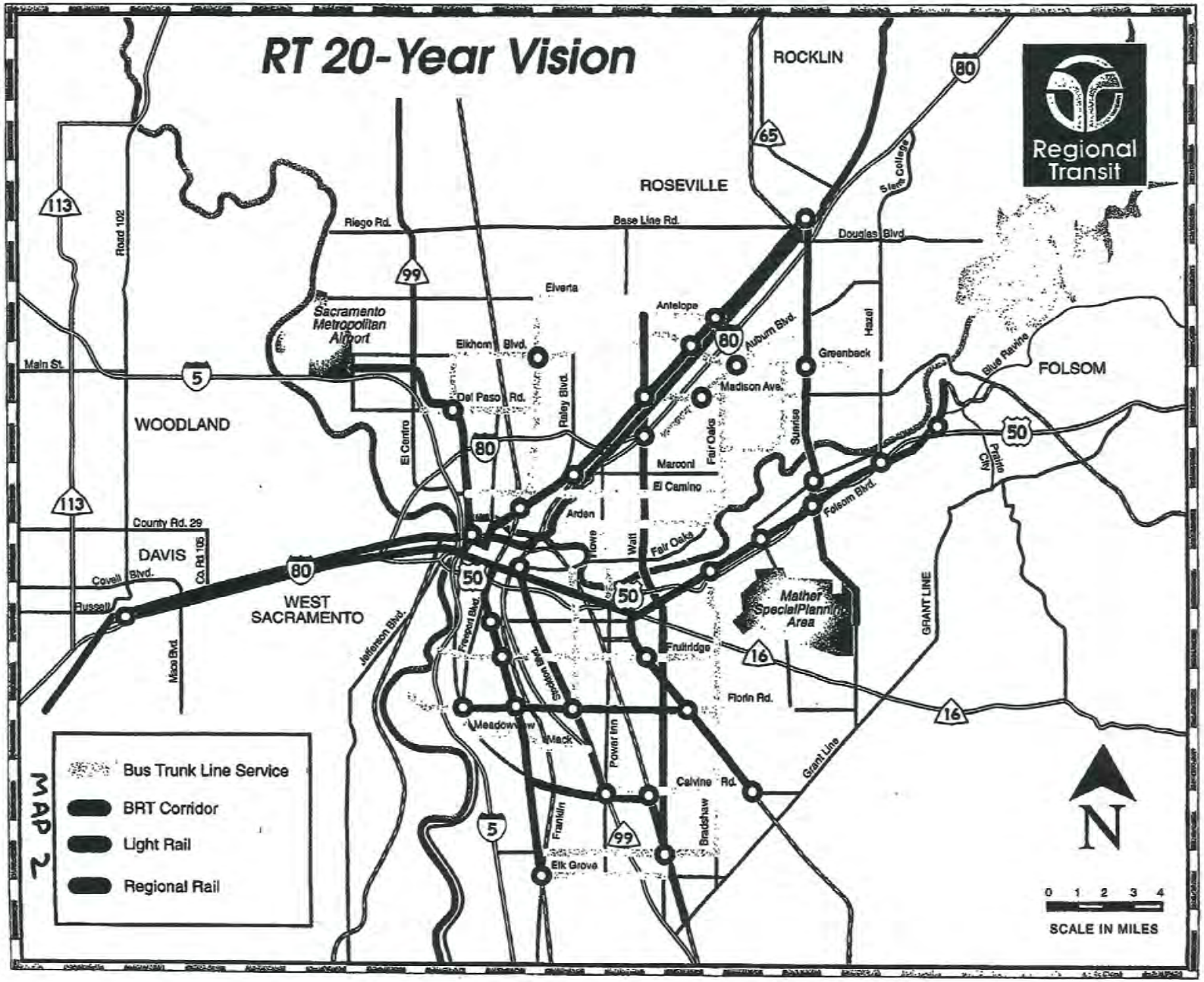
attachments:

SOUTH SACRAMENTO PHASE 2 CORRIDOR PROJECT



MAP 1

THE South Line PHASE 2


RT 20-Year Vision
Regional Transit
ROCKLIN
ROSEVILLE
FOLSOM
WOODLAND
DAVIS
WEST SACRAMENTO
Sacramento Metropolitan Airport
Mather Special Planning Area
Riego Rd.
Base Line Rd.
Douglas Blvd.
Elverta
Antelope
Auburn Blvd.
Greenback
Madison Ave.
Elkhorn Blvd.
Del Paso Rd.
Raley Blvd.
Marconi
El Camino
Arden
Fair Oaks
Folsom Blvd.
Fruitridge
Florin Rd.
Meadowview
Mack
Calvine Rd.
Elk Grove
Main St.
County Rd. 29
Covell Blvd.
Russell
Mace Blvd.
Jefferson Blvd.
Freeport Blvd.
Stockton Blvd.
Power Inn
Franklin
Bradshaw
Grant Line
GRANT LINE
Prairie City
Blue Ravine
Sunrise
Hazel
Fair Oaks
Watt
Howe
El Centro
Road 102
Co. Rd 105
Bus Trunk Line Service
BRT Corridor
Light Rail
Regional Rail
N
0 1 2 3 4
SCALE IN MILES
MAP 2

Freeport Regional Water Authority

Board Members

Sacramento County Water Agency
Ila Collin
Don Nottoli

East Bay Municipal Utility District
Katy Foulkes
John Coleman

Associate Board Member

City of Sacramento
Jim Sequeira

Secretary

Sacramento County Water Agency
Cindy H. Turner

Supporting Agency

Bureau of Reclamation

May 2, 2002

MAY -8 2002
PLANNING DEPARTMENT

City of Sacramento Planning and Building Department
Grace Hovey, Associate Planner
Planning Division
1231 I Street, Room 300
Sacramento, CA 95814

SUBJECT: Comments in Response to the Notice of Preparation /Notice of Intent for the Cosumnes River Boulevard Interchange and Roadway Extension Project

Dear Ms. Hovey:

We greatly appreciate the opportunity to provide constructive comments in response to the Notice of Preparation and Notice of Intent for the Cosumnes River Boulevard Interchange and Roadway Extension project. The Freeport Regional Water Authority is a joint powers agency comprised of the Sacramento County Water Agency (SCWA) and the East Bay Municipal Utility District (EBMUD). The Authority was created to facilitate the development of the Freeport Regional Water Project (FRWP), a joint water supply project that will provide significant water supply, drought protection, and groundwater enhancement benefits to the Sacramento and Bay Area regions, as well as provide opportunities for other regions to realize benefits from project facilities.

As currently envisioned, the FRWP would consist of:

- a new intake structure with pumping facilities located on the Sacramento River, with a capacity of up to 185 million gallons per day;
- a raw water pipeline extending from the intake structure to a turnout, at approximately Bradshaw Road in central Sacramento County;
- a new water treatment plant in central Sacramento County to serve SCWA needs;
- a raw water pipeline from the turnout to the Folsom South Canal;
- a new pumping plant near the end of the Folsom South Canal;
- a new connection pipeline from the terminus of the Folsom South Canal to the Mokelumne Aqueducts; and
- a new pumping and treatment facility at the Mokelumne Aqueducts to deliver water to EBMUD.

700 H Street, Suite 2450
Sacramento, CA 95814
Tel: 916/876-5411
Fax: 916/874-7593
www.FreeportProject.org

Some of the potential pipeline alignments presently under study by the Authority would follow the future extension of Cosumnes River Boulevard through the Delta Shores area. In addition, the Authority is aware of several other projects in the same general vicinity. Therefore, the Authority suggests that close coordination and open communication be maintained during all phases of project planning for the FRWP and Cosumnes River Boulevard extension, as well as the other local projects. The Authority is fully committed to such open communication and welcomes any opportunity to conduct joint planning efforts that potentially benefit multiple parties. Authority and City staff have met on several occasions to discuss possible opportunities for mutual benefits and we look forward to continued cooperation between our project efforts.

Thank you again for the opportunity to provide comments.

Sincerely,

Tad Berkebile
Project Manager
Sacramento County Water Agency

Maria C. Solis
Project Manager
East Bay Municipal
Utility District

Community Development Department

8400 Laguna Palms Way Elk Grove, CA 95758 www.elkgrovecity.org

Building Safety & Inspection Division 916.478-2235
Community Conservation Program 916.478-2266
Planning Division 916.478-2265

April 8, 2002

Grace Hovey, Associate Planner
City of Sacramento Planning and Building Department
1231 I Street, Room 300
Sacramento, CA 95814

Subject: Interstate 5/Cosumnes River Blvd. Interchange Project, (EIS/EIR), Notice of Preparation

Dear Grace Hovey:

Thank you for the opportunity to review and comment on the Interstate 5/Cosumnes River Boulevard Interchange Project – Notice of Preparation dated February 20, 2002. Our comments are as follows:

The NOP does not identify the Project's potential to impact:

- The extension of Cosumnes River Boulevard could potentially increase traffic on Calvine Road, as the new extension would be useful to travel from I-5 as opposed to Florin Road to the north or Laguna Boulevard to the south.

The above issue should be studied in the Draft Environmental Impact Report.

Please send the Draft EIR to our office when available.

If you have any questions regarding the comments, please contact me at 361-8384.

Thank you,

Richard Galvin
Associate Environmental Planner

Cc: Phil Carter,
Christine McFerson, AICP
Eric Norris, AICP
Pat Angell, AICP

From: <CRakela@aol.com>
To: <GHOVEY@cityofsacramento.org>
Date: 4/10/02 8:13PM
Subject: Interstate 5/consumnes River Blvd.

Grace,
Here are my project comments:

The Freeport Boulevard Improvement Committee would like the City of Sacramento to recognize the potential historical importance of the remaining "Victory Trees" at the south end of SR160, from Interstate 5 south to the City limits. We feel that it is critical to recognize these mature trees as part of our local heritage.

The trees are the remaining specimens of a living memorial to Sacramento area veterans of World War I. Cultivated from seeds of trees found on the French battlefront where local soldiers died, the Veterans of Foreign Wars, Sacramento Women's Council and the City of Sacramento planted them in memory of their loved ones. Several groups since then, including the FBIC, continue to monitor and protect the vestiges of this living memorial and regional landmark. FBIC contends that the remaining "tunnel of trees" is potentially eligible for listing as a point of historical interest. The committee is also in the process of nominating the Victory Trees as heritage and landmark trees in Sacramento from the Victory Highway.

We ask the City to continue to help us to protect this living memorial and also help us to replant the boulevard in commemoration of the local veterans of W.W.I.

Carol Rakela
8721 River Road
Sacramento, CA 95832

STONE PROPERTIES and INVESTMENTS

March 22, 2002

Public Works
City of Sacramento
927 10th Street
Sacramento, CA 95814-2702

ATTN: Gwen Owens, Associate Civil Engineer

Dear Gwen Owens:

As you will recall, we met at the Amherst church location when you were showing the maps relating to the Cosumnes Expressway extension.

I have now had an opportunity to study the maps and believe that there's's no question but that the Northern route as proposed, contrasted with the Southern route, would be the most desirable.

The main reason is that the Southern route seems to split the property owned by the Sacramento Regional Sanitation District. Wouldn't that make it awkward for them to utilize their holdings effectively?

On the other hand, I do not see any advantage to the Southern proposal over the Northern proposal.

That's my input on behalf of the Stone Family Trust. I have so advised the co-owners.

I enjoyed meeting you. Good wishes,

Bill Stone (Stone Family Trust)

J.W. "Bill" Stone

cc: Boswell Alliance

2016 Sutterville Road * P.O. Box 22688 * Sacramento, CA 95822 * (916) 452-1111 * FAX 451-1111

REALTOR®

City of Sacramento
Department of Public Works

State of California
Department of Transportation

Interstate 5/Cosumnes River Boulevard Interchange and Roadway Extension

Project Comment Card

We would like your feedback on this project. Please let us know your comments and concerns in the space below.

Please provide us with the contact information below, so we can add you to our project mailing list.
Please submit comments no later than Wednesday, May 1, 2002

Name	Address/Phone
J.W. 'Bill' Stone	2016 Sutterville Rd. Sacto, CA. 95822 916 452-1111

Comments/Concerns

Representing Stone Family Trust

Northern Route is Preferable

RECEIVED

PLANNING DEPARTMENT

Individuals are encouraged to submit comments in writing and either e-mail them to Grace Hovey at GHOVEY@cityofsacramento.org or mail them to address on reverse side of this card.

Check Below if :

X I would like to be contacted about the project (Please make sure to fill in contact information above)

For further information about this project, contact:
Gwen Owens, at (916) 264-8299 or Tim Fleming at (916) 381-9100
For further information about the environmental review, contact:
Grace Hovey, at (916) 264-7601

City of Sacramento
Department of Public Works

State of California
Department of Transportation

PUBLIC NOTICE

Interstate 5/Cosumnes River Boulevard Interchange and Roadway Extension

The City of Sacramento proposes with the cooperation of Caltrans to extend Cosumnes River Boulevard from its current westerly terminus at Franklin Boulevard to an interchange with I-5 and potentially further west to Freeport Boulevard.

The project is needed because the existing east-west arterial roadways within the southern portion of the City are insufficient to alleviate future congestion and meet traffic demand. The primary purpose of the project is to provide an east-west connector between I-5 and SR 99, which would improve mobility within the southerly limits of the study area and alleviate future congestion on east-west arterial roadways within the southern portion of the City. The secondary purpose of the Cosumnes River Boulevard project is to provide access to developable land on both sides of I-5 in accordance with the City of Sacramento General Plan.

Funding for the project will be provided by the City, State, and Federal Highway Administration. The range for total cost of the project is $35-41 million. The project is scheduled for completion of construction in the year 2008.

A public "drop-in" workshop is planned.

WHEN	WHERE
Thursday, March 14, 2002 5-8 PM	Antioch Progressive Baptist Church 7650 Amherst Street, Sacramento

The workshop will allow area residents and Caltrans and City staff to exchange information concerning the project. Information concerning project design, project scheduling, cost, and environmental issues will be available at the workshop. Maps and plans of the proposed work will be on display and Caltrans and City staff will be present to talk with individuals and answer questions. There will be no formal presentation and individuals may drop by at any time during the three-hour event. The workshop is intended to be an informational meeting.

City of Sacramento
Department of Public Works

State of California
Department of Transportation

Interstate 5/Cosumnes River Boulevard Interchange and Roadway Extension

Project Comment Card

We would like your feedback on this project. Please let us know your comments and concerns in the space below.

Please provide us with the contact information below, so we can add you to our project mailing list.
Please submit comments no later than Wednesday, May 1, 2002

Name	Address/Phone
Natalie Williams	Phone # (916) 428-3002 4110 Evalita Wy, Sacto, CA 95823

Comments/Concerns

These are my concerns!
1. How will the interchange + Roadway Extensions offer better service to these areas?
   A. Eliminate buss transferring from one point to another
   B. Speedier transportation throughout the day
2. What will be the hours of operation?
3. Noise + more population
4. Future constructions encouraged? (Ex. Senior housing? etc.

Individuals are encouraged to submit comments in writing and either e-mail them to Grace Hovey at GHOVEY@cityofsacramento.org or mail them to address on reverse side of this card.

Check Below if :

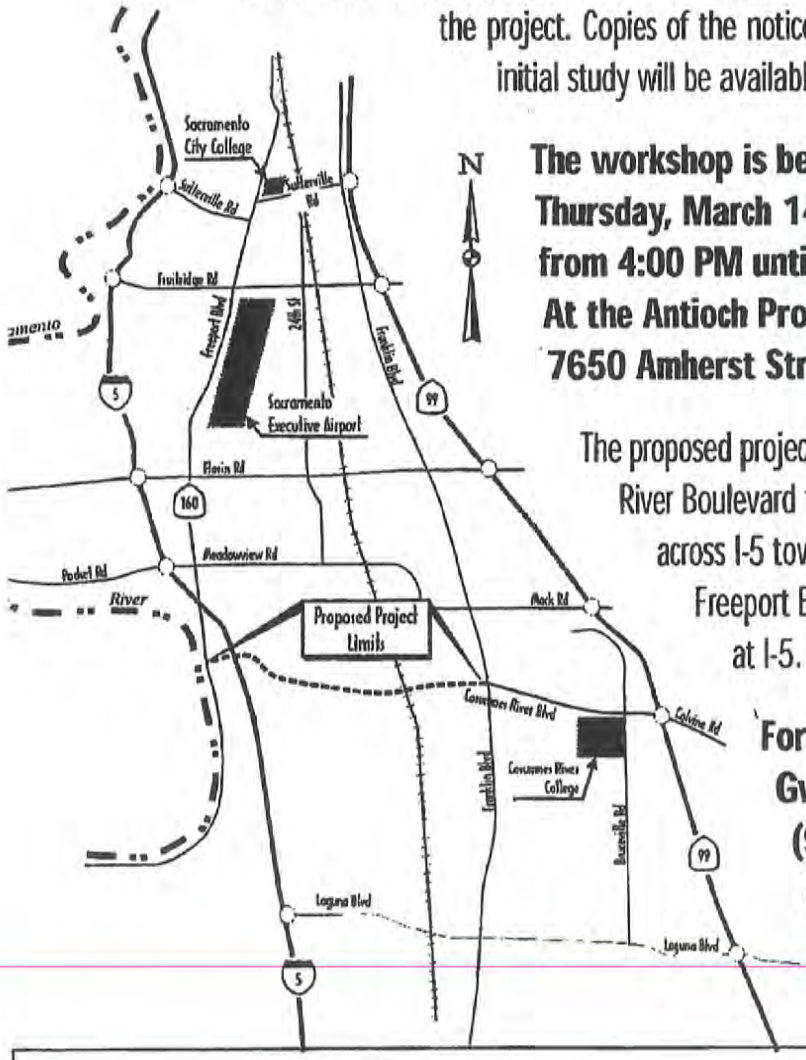
-------- I would like to be contacted about the project (Please make sure to fill in contact information above)

For further information about this project, contact:
Gwen Owens, at (916) 264-8299 or Tim Fleming at (916) 381-9100
For further information about the environmental review, contact:
Grace Hovey, at (916) 264-7601

YOU ARE INVITED TO A

Public Workshop

The City of Sacramento is preparing the preliminary design work for the extension of Cosumnes River Boulevard. City staff, Caltrans staff and consulting engineers will be on hand at this workshop to answer your questions about this project. Information concerning project design, project scheduling, cost and environmental issues will be available. The City and Caltrans are in the process of preparing an environmental impact statement/environmental impact report (EIS/EIR) for the project. Copies of the notice of preparation of an EIR and initial study will be available for review at the workshop.



The workshop is being held
Thursday, March 14, 2002
from 4:00 PM until 7:00 PM
At the Antioch Progressive Baptist Church
7650 Amherst Street, Sacramento

The proposed project would extend Cosumnes River Boulevard from Franklin,Boulevard West across I-5 toward the Sacramento River to Freeport Boulevard with an Interchange at I-5.

For more information call:
Gwen Owens
(916) 264-8299,
or Grace Hovey
(916) 264-7601

City of Sacramento
Department of Public Works

State of California
Department of Transportation

PUBLIC NOTICE

Interstate 5/Cosumnes River Boulevard Interchange and Roadway Extension

The City of Sacramento proposes with the cooperation of Caltrans to extend Cosumnes River Boulevard from its current westerly terminus at Franklin Boulevard to an interchange with I-5 and potentially further west to Freeport Boulevard.

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Funding for the project will be provided by the City, State, and Federal Highway Administration. The range for total cost of the project is $35-41 million. The project is scheduled for completion of construction in the year 2008.

A public "drop-in" workshop is planned.

WHEN	WHERE
Thursday, March 14, 2002 5-8 PM	Antioch Progressive Baptist Church 7650 Amherst Street, Sacramento

The workshop will allow area residents and Caltrans and City staff to exchange information concerning the project. Information concerning project design, project scheduling, cost, and environmental issues will be available at the workshop. Maps and plans of the proposed work will be on display and Caltrans and City staff will be present to talk with individuals and answer questions. There will be no formal presentation and individuals may drop by at any time during the three-hour event. The workshop is intended to be an informational meeting.

The City and Caltrans are in the process of preparing an environmental impact statement/environmental impact report (EIS/EIR) for the project. Copies of the notice of preparation of an EIR and initial study will be available for review at the workshop.

If you need special accommodations, contact Gwen Owens at 916/264-8299 by March 10, 2002.

If you are unable to attend the workshop and have questions about the project, please call Grace Hovey at the City of Sacramento Planning and Building Department, 916/264-7601 or ghovey@cityofsacramento.org. Please send any written comments to Grace Hovey no later than 30 days after publication of the notice. Your comments will be included as part of the workshop records.

There are several other projects in the project area that are being proposed by other agencies, including the RT light rail line extension, the Lower Northwest Interceptor project, the Morrison Creek levee improvement project, and the Freeport Water Diversion project. Representatives of these projects have been invited to attend this workshop and may be present to answer questions about their projects.

City of Sacramento
Department of Public Works

State of California
Department of Transportation

PUBLIC NOTICE

Interstate 5/Cosumnes River Boulevard Interchange and Roadway Extension

The City of Sacramento proposes with the cooperation of Caltrans to extend Cosumnes River Boulevard from its current westerly terminus at Franklin Boulevard to an interchange with I-5 and potentially further west to Freeport Boulevard.

The project is needed because the existing east-west arterial roadways within the southern portion of the City are insufficient to alleviate future congestion and meet traffic demand. The primary purpose of the project is to provide an east-west connector between I-5 and SR 99, which would improve mobility within the southerly limits of the study area and alleviate future congestion on east-west arterial roadways within the southern portion of the City. The secondary purpose of the Cosumnes River Boulevard project is to provide access to developable land on both sides of I-5 in accordance with the City of Sacramento General Plan.

Funding for the project will be provided by the City, State, and Federal Highway Administration. The range for total cost of the project is $35-41 million. The project is scheduled for completion of construction in the year 2008.

A public presentation is being given at the regular meeting of the Freeport Improvement Association.

WHEN	WHERE
Wednesday, March 27, 2002 6:00 PM	Moon River Inn 8201 Freeport Blvd.

The presentation will allow area residents to obtain information about the project. Information concerning project design, project scheduling, cost, and environmental issues will be available. The City and Caltrans are in the process of preparing an environmental impact statement/environmental impact report (EIS/EIR) for the project. Copies of the notice of preparation of an EIR and initial study will be available for review at the workshop.

If you are unable to attend the presentation and have questions about the project, please call Grace Hovey at the City of Sacramento Planning and Building Department, 916/264-7601, or ghovey@cityofsacramento.org. Please send any written comments to Grace Hovey no later than 30 days after publication of the notice.

City of Sacramento
Department of Public Works

State of California
Department of Transportation

Interstate 5/Cosumnes River Boulevard Interchange and Roadway Extension

Project Comment Card

We would like your feedback on this project. Please let us know your comments and concerns in the space below.

Please provide us with the contact information below, so we can add you to our project mailing list.
Please submit comments no later than Wednesday, May 1, 2002

Name	Address/Phone
Comments/Concerns	

Individuals are encouraged to submit comments in writing and either e-mail them to Grace Hovey at GHOVEY@cityofsacramento.org or mail them to address on reverse side of this card.

Check Below if :

------- I would like to be contacted about the project (Please make sure to fill in contact information above)

For further information about this project, contact:
Gwen Owens, at (916) 264-8299 or Tim Fleming at (916) 381-9100
For further information about the environmental review, contact:
Grace Hovey, at (916) 264-7601

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without proper postage.

City of Sacramento
Office of Environmental Affairs
1231 I Street, Suite 300
Sacramento, CA 95814

Grace Hovey
Associate Planner
City of Sacramento
1231 I Street, Suite 300
Sacramento, CA 95814

THE DAILY RECORDER

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PATTI RANSDELL
100 HOWE AVE #210
PUBLIC OUTREACH MANAGER
SACRAMENTO, CA 95825

COPY OF NOTICE

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03/27/02

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Sonoma County Herald-Recorder	(707) 545-1166
The Los Angeles Daily Journal	(213) 229-5300
The (Oakland) Inter-City Express	(510) 272-4747

SC#: 372584

PUBLIC NOTICE
NOTICE OF PREPARATION FOR THE DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE INTERSTATE 5/COSUMNES RIVER BOULEVARD INTERCHANGE AND ROADWAY EXTENSION.

The City of Sacramento proposes with the cooperation of Caltrans to extend Cosumnes River Boulevard from this current westerly terminus at Franklin Boulevard to an interchange with I-5 and potentially further west to Freeport Boulevard.

The project is needed because the existing east-west arterial roadways within the southern portion of the City are insufficient to alleviate future congestion and meet traffic demand. The primary purpose of the project is to provide an east-west connector between I-5 and SR 99, which would improve mobility within the southerly limits of the study area and alleviate future congestion on east -west arterial roadways within the southern portion of the City. The secondary purpose of the Cosumnes River Boulevard project to provide access to developable land on both sides of I-5 in accordance with City of Sacramento General Plan.

Funding for the project will be provided by the City, State, and Federal Highway Administration. The ranger for total cost of the project is $35-41 million. The project is scheduled for completion of construction in the year 2008.

The City of Sacramento is the lead agency for the preparation of the EIR. As the lead agency, the City is required under CEQA to prepare a Notice of Preparation (NOP) to inform interested persons and responsible agencies that an EIR will be prepared. The purpose of the NOP is to provide responsible agencies and interested persons with sufficient project information and information regarding potential environmental effects to enable them to make a meaningful response as to the scope and content of the information to be included in the EIR.

A public presentation is being given at the regular meeting to the Freeport Improvement Association.

WHEN: Wednesday, March 27, 2002 - 6:00 PM

WHERE: Moon River Inn, 8201 Freeport Blvd.

The presentation will allow area residents to obtain information about the project. Information concerning project design, project scheduling, cost, and environmental issues will be available. The City and Caltrans are in the process of preparing an environmental impact statement/environmental impact report (EIS/EIR) for the project. Copies of the notice of preparation of an EIR and initial study will be available for review at the workshop.

If you are unable to attend the presentation and have questions about the project, please contact Gwen Owens at (916) 264-8299 or gowens@cityofsacramento.org

For information on the environmental process, contact Grace Hovey at 1231 I Street, Room 300, Sacramento, CA 95814, or fax to (916) 264-7185.

The City and Caltrans are in the process of preparing an environmental impact statement/environmental impact report (EIS/EIR) for the project. Copies of the notice of preparation of an EIR and initial study will be available for review at the presentation.

Please send any written comments to Grace Hovey by May 1, 2002.

03/27/02

SC- 372584#

Tuesday, March 26, 2002 The Sacramento Bee SACBEECLASSIFIED 916-321-1188

Legal Notices 2005

NO 135 PUBLIC NOTICE

Public Notice

NOTICE OF PREPARATION FOR THE DRAFT ENVIRONMENTAL IMPACT REPORT FOR THE INTERSTATE 5/COSUMNES RIVER BOULEVARD INTERCHANGE AND ROADWAY EXTENSION

The City of Sacramento proposes with the cooperation of Caltrans to extend Cosumnes River Boulevard from its current westerly terminus at Franklin Boulevard to an interchange with I-5 and potentially further west to Freeport Boulevard.

The project is needed because the existing east-west arterial roadways within the southern portion of the City are insufficient to alleviate future congestion and meet traffic demand. The primary purpose of the project is to provide an east-west connector between I-5 and SR 99, which would improve mobility within the southerly limits of the study area and alleviate future congestion on east-west arterial roadways within the southern portion of the City. The secondary purpose of the Cosumnes River Boulevard project is to provide access to developable land on both sides of I-5 in accordance with the City of Sacramento General Plan.

Funding for the project will be provided by the City, State, and Federal Highway Administration. The range for total cost of the project is $35-41 million. The project is scheduled for completion of construction in the year 2008.

The City of Sacramento is the lead agency for the preparation of the EIR. As the lead agency, the City is required under CEQA to prepare a Notice of Preparation (NOP) to inform interested persons and responsible agencies that an EIR will be prepared. The purpose of the NOP is to provide responsible agencies and interested persons with sufficient project information and information regarding potential environmental effects to enable them to make a meaningful response as to the scope and content of the information to be included in the EIR.

A public presentation is being given at the regular meeting of the Freeport Improvement Association.

WHEN Wednesday, March 27, 2002
6:00 PM
WHERE
Moon River Inn
8201 Freeport Blvd.

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Please send any written comments to Grace Hovey by May 1, 2002.
11 March 26, 2002

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825-1846

In reply refer to:
1-1-04-F-0363

MAR 1 1 2005

Mr. Gene Fong
Division Administrator
Federal Highway Administration
650 Capitol Mall, Suite 4-100
Sacramento, California 95814

Subject: Section 7 Consultation for the Proposed Interstate 5-Cosumnes River Boulevard Interchange Project, Sacramento County, California

Dear Mr. Fong:

This is in response to the Federal Highway Administration's (FHWA) request for formal consultation with the U.S. Fish and Wildlife Service (Service) on the proposed Interstate 5-Cosumnes Boulevard Interchange project (project) in Sacramento County, California. Your December 5, 2003, request was received in our office on December 10, 2003. This document represents the Service's biological opinion on the effects of the action on the federally listed giant garter snake (*Thamnophis gigas*) (snake), valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*) (beetle), vernal pool fairy shrimp (*Branchinecta lynchi*), and vernal pool tadpole shrimp (*Lepidurus packardi*) (vernal pool crustaceans), in accordance with section 7 of the Endangered Species Act of 1973, as amended (Act).

The findings and recommendations in this consultation are based on: (1) the *Biological Assessment for the Interstate 5-Cosumnes River Boulevard Interchange Project,* dated November 2003, prepared by Jones and Stokes Associates (Jones & Stokes), the biological consultant; (2) the December 5, 2003, letter from the FHWA to the Service requesting initiation of formal consultation on the proposed project; (3) electronic mail (email) correspondence between representatives of the Service, Jones & Stokes, and the California Department of Transportation (Caltrans) between January, and July, 2004; (4) a March 29, 2004, site visit attended by representatives of the Service, Caltrans, and Jones & Stokes; (5) a July 12, 2004, letter from Caltrans to the Service, providing additional information on the proposed project; electronic mail (email) correspondence between Caltrans and the Service in October and December, 2004; and (6) other information available to the Service.

TAKE PRIDE IN AMERICA

Consultation History

December 5, 2003. FHWA submitted a letter to the Service, requesting the initiation of formal consultation on the proposed project. Enclosed in the submittal package was the *Biological Assessment for the Interstate 5-Cosumnes River Boulevard* Project, prepared by Jones & Stokes, dated November 2003. The Service received the letter and enclosures on December 10, 2003.

January 9, 2004. The Service issued a letter to FHWA, requesting additional information on the proposed project (Service file number 1-1-04-I-0575).

February 4, 2004. Amy Kennedy of Caltrans submitted to Kelly Fitzgerald of the Service, via email, additional information and comments responding to the Service's January 9, 2004, letter.

February 23, 2004. Ms. Fitzgerald responded to Caltrans' February 4, 2004, email via email, requesting additional information on the proposed project and further clarification on items addressed in the February 4, 2004, email.

March 29, 2004. Ms. Fitzgerald, Ken Fuller, and Rick Kuyper of the Service conducted a site visit of the proposed project area with representatives from Caltrans, Jones & Stokes, Mark Thomas & Associates, and the Sacramento Regional County Sanitation District (SRCSD) Bufferlands Management.

March 30, 2004. Kelley Phillips of Caltrans emailed Kelly Fitzgerald additional information about the proposed project.

March 31, April 1 and 29,and May 4 and 18 , 2004. Ms. Fitzgerald and Will Kohn of Jones & Stokes corresponded via email regarding the effects analysis for the snake.

July 12, 2004. Caltrans submitted a letter to the Service, providing additional information on the proposed project. The Service received this information on July 16, 2004.

October 8, 2004. Kelly Fitzgerald of the Service emailed Amy Kennedy of Caltrans and Will Kohn of Jones & Stokes the Service's comments on Caltrans' July 12, 2004, letter and recommended conservation measures for the snake, beetle, and vernal pool crustaceans.

December 2, 2004. Amy Kennedy of Caltrans emailed Kelly Fitzgerald of the Service in response to the Service's October 8, 2004, email. Ms. Kennedy provided the Service with comments from the City of Sacramento.

BIOLOGICAL OPINION

Description of the Proposed Action

The applicant, the City of Sacramento (City), in conjunction with Caltrans and the FHWA, proposes to construct Cosumnes River Boulevard westward from Franklin Boulevard to Freeport Boulevard, with an interchange at Interstate 5 (I-5). The proposed project involves the construction of a four- to six-lane roadway between Franklin and Freeport Boulevards, a Union Pacific Rail Road bridge crossing, a Morrison Creek bridge crossing, and a modified cloverleaf interchange at I-5. The primary purpose of the proposed project is to provide an east-west connector between I-5 and State Route 99 (SR 99), which would improve mobility and alleviate future congestion within the southerly limits of south Sacramento. The secondary purpose is to provide access to developable land on both sides of I-5 in accordance with the City's General Plan. Currently, this land is in agricultural production.

One of the stated needs of the proposed action is to alleviate future congestion and meet traffic demand in the southern portion of Sacramento (Jones & Stokes 2003). Traffic volumes forecasted for 2025 are expected to outstrip the ability of east-west roadways to accommodate travel between I-5 and SR 99 in the proposed project area. The closest east-west connectors between I-5 and SR 99 are the Meadowview Road/Mack Road corridor to the north and Laguna Boulevard to the south.

The proposed project is located in the southwest portion of the City. While the proposed project area is primarily agricultural lands, it is bordered by urban land uses, including residential, commercial, industrial, and institutional. Morrison Creek, Union House Creek, and several agricultural canals transverse portions of the proposed project area, and a Union Pacific Railroad (UPRR) line extends north-to-south through the proposed project area. A portion of the proposed project is situated on SCRSD's Bufferlands, which are open-space lands surrounding the Sacramento Regional Wastewater Treatment Plant (SRWTP). The 2,500-acre Bufferlands were acquired in the 1970s by SRCSD to provide a buffer between the newly constructed SRWTP and the neighboring community, and to provide an area for future expansion of the SRWTP.

A complete description of the proposed project is included in the biological assessment (Jones & Stokes 2003) and in the July 12, 2004, letter from Caltrans to the Service. The construction of the Morrison Creek over-crossing proposed project is expected to occur over two seasons, as defined as the period between May 1 and October 1.

The proposed project will affect habitats of the snake, the beetle, and vernal pool crustaceans. The proposed project would permanently affect 0.002 are of aquatic snake habitat and 0.077 acre of upland snake habitat, and would temporarily affect 0.136 acre of aquatic snake habitat and 3.108 acres of upland habitat. A total of 26 elderberry shrubs, the obligate host plant for the beetle, would be directly affected by the proposed project. No habitat for vernal pool crustaceans will be directly affected by the proposed project; however, a 0.05-acre seasonal wetland would be indirectly affected.

Proposed Conservation Measures

The project applicant has proposed several measures designed to avoid, minimize, and compensate for take of the snake, beetle, and vernal pool crustaceans resulting from construction activities related to the implementation of the proposed project.

All Species

1. An environmental education program that focuses on the importance of onsite biological resources, including special status species, will be developed and implemented. All construction personnel will receive this Service-approved environmental awareness training, which will be conducted by a Service-approved biologist. The training will include information on the special status species, including the snake, the beetle, and the listed vernal pool crustaceans, the required avoidance and minimization measures to avoid take of these species and their habitats, and possible penalties for not complying with the requirements. The Service-approved biologist will inform all construction personnel about the life history of these special status species, the importance of onsite habitats for these species, and the terms and conditions of this biological opinion. Proof of this instruction will be submitted to the Sacramento Fish and Wildlife Office.

2. Prior to the commencement of construction, a qualified biologist will identify sensitive biological habitat onsite, including potential habitat for the snake, beetle, and vernal pool crustaceans. These areas will be designated as Environmentally Sensitive Areas (ESAs) and should be avoided during construction. High-visibility orange construction barrier fencing will be installed to identify and protect these ESAs. Fencing will be furnished, constructed, inspected weekly, maintained, and removed only when the construction of the project is completed.

    a. Fencing will be established at least 200 feet from the edge of aquatic snake habitat.

    b. Fencing will be established at a minimum setback of 20 feet from the dripline of each elderberry shrub that is within 100 feet of the proposed project alignment.

    c. Fencing will be established at a minimum distance of 50 feet from the edge of "seasonal wetland 1", which is suitable vernal pool crustacean habitat.

3. Signs will be posted every 50 feet along the edge of the ESAs, with the following information: "This area is habitat of federally-threatened and/or endangered species, and must not be disturbed. These species are protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." The signs should be clearly readable from a distance of 20 feet, and must be maintained for the duration of construction.

4. After construction activities are complete, any temporary fill or construction debris shall be removed and disturbed areas restored to their pre-project conditions.

5. A Service-approved biologist will inspect construction-related activities at the proposed project site to ensure that no unauthorized take of federally-listed species or destruction of their habitat occurs.

6. Any unauthorized deviation from these proposed conservation measures will be reported within one (1) working day of its discovery to the Division Chief of Endangered Species at the Sacramento Fish and Wildlife Service Office. Written notification must be made within three (3) calendar days and include the date, time, and precise location of the event on a 7.5-minute quadrangle, and any other pertinent information. In addition, color photographs should document the incident and be included in the written notification.

Giant Garter Snake

1. The applicant has proposed to compensate for all temporarily and permanently affected snake habitat by purchasing off-site snake habitat credits from a Service-approved snake habitat conservation area servicing the area where the proposed project effects occur. All temporary effects which occur over two seasons (as defined as the period between May 1 and October 1) will be restored and compensated at a 1:1 ratio, and all permanent effects will be compensated at a 3:1 ratio. Prior to the initiation of construction activities, the project proponent will purchase the equivalent of 3.481 acres of snake habitat credits from a Service-approved snake conservation area to compensate for 3.244 acres of temporarily affected snake habitat and 0.079 acre of permanently affected snake habitat. Furthermore, the project proponents will restore all temporarily affected snake habitats, including 0.136 acre of aquatic habitat and 3.108 acres of upland habitat.

2. The project proponents will conduct construction activity within snake habitat (*e.g.* aquatic, upland, and rice habitat) between May 1 and October 1. This is the active period for the snake and direct mortality is lessened, because snakes are expected to actively move and avoid danger. If it appears that construction activity may go beyond October 1, the project proponents will contact the Service as soon as possible and no later than September 15 to determine if additional measures are necessary to minimize take. Construction activities within 200 feet from the banks of snake aquatic habitat will be avoided during the snake's inactive season.

3. Aquatic habitat will be dewatered 15 days prior to the initiation of construction activities.

4. At most 24-hours before the start of construction activities, the project site will be surveyed for snakes by a qualified biologist. Surveys of the project area will be repeated if a lapse in construction activity of two weeks or greater occurs.

5. If excavation within the Morrison Creek channel is necessary, excavation for removal of accumulated sediments will be done by using equipment located on and operated from the top of the bank.

6. The project proponents will maintain and monitor the project site for one year following the completion of construction and restoration activities. Monitoring reports documenting the restoration effort should be submitted to the Service upon the completion of the restoration implementation and one year after the restoration implementation. Monitoring reports should include photo-documentation, when restoration was completed, what materials were used, specified plantings, and justifications of any substitutions to the Service-recommended guidelines.

Valley Elderberry Longhorn Beetle

1. The 26 elderberry shrubs, which are located within 20 feet of the centerline of the proposed alignment of the project and cannot be avoided, shall be transplanted to a Service-approved conservation area. Transplanting must occur while the elderberry plants are dormant, between November and the first two weeks of February, after they have lost their leaves. The Service will be consulted prior to transplantation and a Service-approved biologist will monitor the transplanting activities. These shrubs will be transplanted according to the Service's July 9, 1999 *Conservation Guidelines for the Valley Elderberry Longhorn Beetle* (Beetle Conservation Guidelines; Service 1999a).

2. To compensate for direct affects to the beetle, prior to ground breaking activities at the project site, the project proponents will purchase the equivalent of 26.0 beetle habitat credits at a Service-approved conservation bank. At least 111 rooted elderberry seedlings and 111 associated native plant species will be planted.

3. The minimum area required for the conservation area is is 1.02 acres (44,640 square feet) to ensure that no more than five elderberry seedlings/transplants and five associated native plants are planted per 1,800 square feet The conservation area shall be managed and monitored in perpetuity as outlined in the Beetle Conservation Guidelines. This includes the management and monitoring of the conservation area for either ten (10) consecutive years or seven (7) years over a 15-year period, with monitoring reports submitted for each monitoring year. Additionally, a management plan must be prepared which describes the long-term protection of this conservation area in order to protect the area in perpetuity as habitat for the valley elderberry longhorn beetle.

Table 1 summarizes the number of adversely affected elderberry shrubs, as well as the compensation proposed by the applicant following the Beetle Conservation Guidelines.

Table 1: Elderberry Stem Size and Stem Numbers and Compensation; Interstate 5-Cosumnes River Boulevard Interchange Project, Sacramento County, California

Stem Size	# of stems	Exit Holes	Elderberry Seedling Ratio	# Elderberry Seedlings	Associate Native Spp. Ratio	# Associate Native Spp.
1"-3"	46	No	1:1	46	1:1	46
1"-3"	0	Yes	2:1	0	2:1	0
3"-5"	7	No	2:1	14	1:1	14
3"-5"	0	Yes	4:1	0	2:1	0
>5"	17	No	3:1	51	1:1	51
>5"	0	Yes	6:1	0	2:1	0
Total	**70**			**111**		**111**
**** All elderberry shrubs are located in non-riparian habitat.***						

4. Seven additional elderberry shrubs adjacent to the proposed construction right-of-way will not be removed from the project site. These shrubs are between 20 feet and 100 feet of the proposed project alignment. The project proponent will install protective fencing a minimum of 20 feet outside the perimeter of the driplines of these elderberry plants prior to initiating any construction activities on the site. Signs will be posted every 50 feet along the edge of the avoidance area, stating that the area is protected habitat.

Vernal Pool Crustaceans

1. Prior to the commencement of construction activities, the project proponent will compensate for indirect effects to 0.5 acre of habitat of listed vernal pool crustacean by purchasing appropriate credits at a Service-approved conservation bank, including 1.0 acre of preservation credits.

The biological conservation measures, as proposed above and in the project materials reviewed by the Service, are considered part of the proposed actions evaluated by the Service in this biological opinion. Any change in these plans or their implementation that might adversely affect listed species, either directly or indirectly, requires re-initiation of consultation with the Service, as set forth in the final paragraphs of this letter.

Status of the Species

Giant Garter Snake

The Service published a proposal to list the snake as an endangered species on December 27, 1991 (56 FR 67046). The Service reevaluated the status of the snake before

adopting the final rule. The snake was listed as a threatened species on October 20, 1993 (58 FR 54053).

Description - The snake is one of the largest species of garter snakes and it may reach a total length of at least 64 inches. Females tend to be slightly longer and proportionately heavier than males. The weight of adult female snakes is typically 1.1-1.5 pounds (500-700 grams). Dorsal background coloration varies from brownish to olive with a checkered pattern of black spots, separated by a yellow dorsal stripe and two light-colored lateral stripes. Background coloration and prominence of a black-checkered pattern and the three yellow stripes are geographically and individually variable (Hansen 1980; Rossman *et al.* 1996). The ventral surface is cream to olive or brown and sometimes infused with orange, especially in northern populations.

Historical and Current Range - The species formerly occurred throughout wetlands that were extensive and widely distributed in the Central Valley. Fitch (1941) described the historical range of the snake as extending from the vicinity of Sacramento and Contra Costa Counties southward to Buena Vista Lake, near Bakersfield, in Kern County. Prior to 1970, the snake was recorded historically from 17 localities (Hansen and Brode 1980). Five of these localities were clustered in and around Los Banos, Merced County. The paucity of information makes it difficult to precisely determine the species' former range. Nonetheless, these records coincide with the historical distribution of large flood basins, fresh water marshes, and tributary streams. Destruction of wetlands for agriculture and other purposes apparently extirpated the species from the southern one-third of its range by the 1940s and 1950s, including the former Buena Vista Lake and Kern Lake in Kern County, and the historic Tulare Lake and other wetlands in Kings and Tulare Counties (Hansen and Brode 1980; Hansen 1980).

Surveys over the last two decades have found the snake as far north as the Butte Basin in the Sacramento Valley. As recently as the 1970s, the range of the snake extended from near Burrell, Fresno County (Hansen and Brode 1980), northward to the vicinity of Chico, Butte County (Rossman and Stewart 1987). California Department of Fish and Game (CDFG) studies (Hansen 1988) indicate that snake populations currently are distributed in portions of the rice production zones of Sacramento, Sutter, Butte, Colusa, and Glenn Counties; along the western border of the Yolo Bypass in Yolo County; and along the eastern fringes of the Sacramento-San Joaquin River Delta from the Laguna Creek-Elk Grove region of central Sacramento County southward to the Stockton area of San Joaquin County.

Essential Habitat Components - Endemic to wetlands in the Sacramento and San Joaquin valleys, the snake inhabits marshes, sloughs, ponds, small lakes, low gradient streams, and other waterways and agricultural wetlands, such as irrigation and drainage canals and rice fields, and the adjacent uplands. The snake feeds on small fishes, tadpoles, and frogs (Fitch 1941; Hansen 1980, 1988). Essential habitat components consist of: (1) wetlands with adequate water during the snake's active season (early-spring through mid-fall) to provide food and cover; (2) emergent, herbaceous wetland vegetation, such as cattails and bulrushes, for escape cover and foraging habitat during the active season; (3) upland habitat with grassy banks and openings in waterside vegetation for basking; and (4) higher elevation uplands for escape cover (vegetation, burrows) and underground refugia (crevices and small mammal burrows) (Hansen 1980). Snakes

are typically absent from larger rivers and other bodies of water that support introduced populations of large, predatory fish, and from wetlands with sand, gravel, or rock substrates (Brode 1988; Hansen 1980, 1988; Rossman and Stewart 1987). Riparian woodlands do not provide suitable habitat because of excessive shade, lack of basking sites, and absence of prey populations (Hansen 1980).

Reproductive Ecology - The breeding season extends through March and April, and females give birth to live young from late July through early September (Hansen and Hansen 1990). Brood size is variable, ranging from 10 to 46 individual young, with a mean of 23 individuals (Hansen and Hansen 1990). At birth, young average about 8.11 inches snout-to-vent length and 3-5 grams. Young immediately scatter into dense cover and absorb their yolk sacs, after which they begin feeding on their own. Although growth rates are variable, young typically more than double in size by one year of age, and sexual maturity averages three years in males and five years for females (58 **FR** 54053).

Movements and Habitat Use - The snake typically inhabits small mammal burrows and other soil crevices throughout its winter dormancy period (*i.e.*, November to mid-March). It also uses burrows as refuge from extreme heat during its active period. While individuals usually remain in close proximity to wetland habitats, the Biological Resource Division of the U.S. Geological Survey (BRD) has documented snakes using burrows as much as 165 feet away from the marsh edge to escape extreme heat (Wylie *et al.* 1997). Over-wintering snakes have been documented using burrows as far as 820 feet from the edge of marsh habitat. Snakes typically select south- and west-facing burrows as hibernacula (58 **FR** 54053).

In studies of marked snakes in the Natomas Basin, snakes moved about 0.25 to 0.5 miles per day (Hansen and Brode 1993). The total activity varies widely between individuals, however, and individual snakes have been documented moving up to 5 miles over the period of a few days in response to dewatering of habitat (Wylie *et al.* 1997).

In agricultural areas, snakes were documented using rice fields in 19-20 percent of the observations, marsh habitat in 20-23 percent of observations, and canal and agricultural waterway habitats in 50-56 percent of the observations (Wylie 1999). Telemetry studies also indicate that active snakes use uplands extensively; more than 31 percent of observations were in uplands (Wylie 1999). Almost all snakes observed in uplands during the active season were near vegetative cover, where cover exceeded 50 percent in the area within 1.6 feet of the snake. Less than 1 percent of observations were of snakes in uplands with less than 50 percent cover nearby (Wylie 1999).

Predators - Snakes are fed upon by a variety of predators, including raccoons (*Procyon lotor*), striped skunks (*Mephitis mephitis*), opossums (*Didelphis virginiansa*), hawks (*Buteo* sp.), egrets (*Casmerodius albus, Egretta thula*), and great blue herons (*Ardea herodias*).

Reasons for Decline and Threats to Survival - The current distribution and abundance of the snake is much reduced from former times. Loss of habitat due to agricultural activities and flood control have extirpated the snake from the southern one-third of its range in former wetlands

associated with the historic Buena Vista, Tulare, and Kern lakebeds. These lakebeds once supported vast expanses of ideal snake habitat, consisting of cattail and bulrush dominated marshes. Vast expanses of cattail and bulrush floodplain habitat also typified much of the Sacramento Valley historically (Hinds 1952). Prior to reclamation activities beginning in the mid- to late-1800s, about 60 percent of the Sacramento Valley was subject to seasonal overflow flooding in broad, shallow flood basins that provided expansive areas of snake habitat (Hinds 1952). Valley flood wetlands are now subject to cumulative effects of upstream watershed modifications, water storage and diversion projects, as well as urban and agricultural development; all natural habitats have been lost and an unquantifiable but small percentage of semi-natural wetlands remains extant. Only a small percentage of extant wetlands currently provides habitat suitable for the snake.

Ongoing maintenance of aquatic habitats for flood control and agricultural purposes eliminate or prevent the establishment of habitat characteristics required by snakes and can fragment and isolate available habitat, prevent dispersal of snakes among habitat units, and adversely affect the availability of the snake's food items (Hansen 1988; Brode and Hansen 1992). In many areas, the restriction of suitable habitat to water canals bordered by roadways and levee tops renders snakes vulnerable to vehicular mortality. Fluctuation in rice production affects stability and availability of habitat. Recreational activities, such as fishing, may disturb snakes and disrupt basking and foraging activities. Nonnative predators, including introduced predatory game fish, bullfrogs, and domestic cats, can also threaten snake populations. While large areas of seemingly suitable snake habitat exist in the form of duck clubs and waterfowl management areas, water management of these areas typically does not provide the summer water needed by the species. Although snakes on national wildlife refuges are relatively protected from many of the threats to the species, degraded water quality continues to be a threat to the species both on and off refuges. Furthermore, livestock grazing along the edges of water sources degrades water quality in the snake's habitat and have contributed to the elimination and reduction of the quality of available habitat in four known locations (Hansen 1982, 1986).

A number of land use practices and other human activities currently threaten the survival of the snake throughout the remainder of its range. The snake is currently known from a small number of populations. Although some populations have persisted at low levels in artificial wetlands associated with agricultural and flood control activities, many of these altered wetlands are now threatened with urban development. Rapidly expanding cities within the current range of the snake include Chico, Yuba City, Sacramento, Galt, Stockton, Gustine, and Los Banos.

Valley Elderberry Longhorn Beetle

On August 8, 1980, the valley elderberry longhorn beetle was listed as a threatened species (45 FR 52803). Critical habitat for this species was designated and published at 50 CFR §17.95. Two areas along the American River in the Sacramento metropolitan area have been designated as critical habitat for the beetle. These designated areas of critical habitat are the American River Parkway Zone, an area along the lower American River at Goethe and Ancil Hoffman Parks, and the Sacramento Zone, an area located approximately one-half-mile from the American River downstream from the American River Parkway Zone. In addition, an area along Putah Creek,

Solano County, and the area east of Nimbus Dam along the American River Parkway, Sacramento County, are considered essential habitat, according to the Recovery Plan for the beetle (Service 1984). These critical and essential habitat areas support large numbers of mature elderberry shrubs with extensive evidence of use by the beetle.

The beetle is dependent on its host plant, elderberry (*Sambucus* species), which is a locally common component of the remaining riparian forests and savannah areas and, to a lesser extent, the mixed chaparral-foothill woodlands of the Central Valley. Each stage of the beetle's life cycle requires a slightly different part of the elderberry plant as its habitat. The adult beetles feed on the nectarines, flowers, and leaves. Gravid females lay eggs on leaves and in crevices of green stems (Barr 1991). Larvae feed down the pith of a healthy stem into the larger living branches (Halstead and Oldham 2000). Use of the elderberry shrubs by the beetle, a wood borer, is rarely apparent. Frequently, the only exterior evidence of the shrub's use by the beetle is an exit hole created by the larva just prior to the pupal stage. Emergence holes are usually observed in living stems more than one inch in diameter and less than nine feet from the ground (Talley and Holyoak, in prep.). Observations made of elderberry shrubs along the Cosumnes River, in the Folsom Lake area, and near Blue Ravine in Folsom indicate that the beetle may be present in an elderberry shrubs with no evidence of exit holes; the larvae either succumb prior to constructing an exit hole or are not far enough along in the developmental process to construct an exit hole. Larvae appear to be distributed in stems which are one inch or greater in diameter at ground level. The *Valley Elderberry Longhorn Beetle Recovery Plan* (Service 1984) and Barr (1991) contain further details on the beetle's life history.

Vernal Pool Crustaceans

The vernal pool tadpole shrimp and vernal pool fairy shrimp were listed as endangered and threatened, respectively, on September 19, 1994. Complete descriptions of these species are found in 59 **FR** 48136, the final rule listing these species under the Act. These crustaceans are restricted to vernal pools and swales and other seasonal aquatic habitats. The vernal pool fairy shrimp is found in California and southern Oregon, and the vernal pool tadpole shrimp is found in California. Eng *et al.* (1990) and Simovich *et al.* (1992) provide further details about their life history and ecology. The Service did not designate any critical habitat for the vernal pool crustaceans in Sacramento County.

Life history of vernal pool tadpole shrimp - The vernal pool tadpole shrimp has dorsal compound eyes, a large shield-like carapace that covers most of its body, and a pair of long cercopods at the end of its last abdominal segment (Linder 1952; Longhurst 1955; Pennak 1989). It is primarily a benthic animal that swims with its legs down. Vernal pool tadpole shrimp climb or scramble over objects, and plow along bottom sediments as they forage for food. Its diet consists of organic detritus and living organisms, such as fairy shrimp and other invertebrates (Pennak 1989; Fryer 1987). The females deposit their eggs on vegetation and other objects on the pool bottom. Tadpole shrimp eggs are known as cysts, and during the dry months of the year, they lie dormant in the dry pool sediments (Lanaway 1974; Ahl 1991).

The life history of the vernal pool tadpole shrimp is linked to the environmental characteristics of its vernal pool habitat. After winter rains fill the pools, dormant vernal pool tadpole shrimp cysts may hatch in as little as four days (Ahl 1991, Rogers 2001), and and tadpole shrimp may become sexually mature within three to four weeks after hatching (Ahl 1991; Helm 1998; King 1996). A portion of the cysts hatch immediately and the rest remain dormant in the soil to hatch during later rainy seasons (Ahl 1991). The vernal pool tadpole shrimp is a relatively long-lived species (Ahl 1991), and will generally survive for as long as their habitats remain inundated, sometimes for six months or more (Ahl 1991; Gallagher 1996; Helm 1998). Adults are often present and reproductive until the pools dry up in the spring (Ahl 1991; Simovich *et al.* 1992). Mature adults may be present in pools until the habitats dry up in the spring (Ahl 1991; Gallagher 1996; Simovich *et al.* 1992).

Life history of vernal pool fairy shrimp - Vernal pool fairy shrimp have delicate elongate bodies, large stalked compound eyes, no carapace, and 11 pairs of phyllopods, or gill-like structures that also serve as legs. The swim or glide gracefully upside-down by means of complex, wavelike beating movements. Fairy shrimp feed on algae, bacteria, protozoa, rotifers, and detritus. The second pair of antennae in fairy shrimp adult males are greatly enlarged and specialized for clasping the females during copulation. The females carry eggs in an oval or elongate ventral brood sac. The eggs are either dropped to the pool bottom or remain in the brood sac until the female dies and sinks. The dormant cysts are capable of withstanding heat, cold, and prolonged desiccation, and they can remain viable in the soil for decades after deposition. When the pools refill in the same or subsequent seasons, some, but not all, of the cysts may hatch. The cyst bank in the soil may therefore be comprised of cysts from several years of breeding (Donald 1983). The early stages of the fairy shrimp develop rapidly into adults. The vernal pool fairy shrimp can mature quickly, allowing populations to persist in short-lived shallow pools (Simovich *et al.* 1992). In pools that persist for several weeks to a few months, fairy shrimp may have multiple hatches during a single season (Helm 1998; Gallagher 1996).

Distribution of vernal pool tadpole shrimp - Vernal pool tadpole shrimp are found only in ephemeral freshwater habitats in California. The vernal pool tadpole shrimp is known from 168 occurrences in the Central Valley (CNDDB 2004), ranging from east of Redding in Shasta County south to Fresno County, and from a single vernal pool complex located in the San Francisco Bay National Wildlife Refuge in Alameda County. It inhabits vernal pools containing clear to highly turbid water, ranging in size from 54 square feet in the Mather Air Force Base area of Sacramento County, to the 89-acre Olcott Lake at Jepson Prairie in Solano County. Although vernal pool tadpole shrimp are found on a variety of geologic formations and soil types, Helm (1998) found that over 50 percent of vernal pool tadpole shrimp occurrences were on High Terrace landforms and Redding and Corning soils.

Distribution of vernal pool fairy shrimp - Vernal pool fairy shrimp are found only in ephemeral freshwater habitats in California and Southern Oregon. The vernal pool fairy shrimp is known from 342 occurrences extending from the Stillwater Plain in Shasta County through most of the length of the Central Valley to Pinnacles in San Benito County (Eng *et al.* 1990; Fugate 1992; Sugnet and Associates 1993; CNDDB 2004). Five additional, disjunct populations exist: one near Soda Lake in San Luis Obispo County; one in the mountain grasslands of northern Santa

Barbara County; one on the Santa Rosa Plateau in Riverside County; one near Rancho California in Riverside County; and one on the Agate Desert near Medford, Oregon. Three of these isolated populations each contain only a single pool known to be occupied by the vernal pool fairy shrimp. The vernal pool fairy shrimp inhabits vernal pools with clear to tea-colored water, most commonly in grass- or mud-bottomed swales, basalt flow depression pools in unplowed grasslands, or even sandstone rock outcrops or alkaline vernal pools.

Although the vernal pool crustaceans addressed in this biological opinion are not often found in the same vernal pool at the same time, when coexistence does occur, it is generally in deeper, longer lived pools (Eng *et al.* 1990; Thiery 1991; Gallagher 1996). In larger pools, vernal pool crustacean species may be able to coexist by utilizing different physical portions of the vernal pool or by eating different food sources (Daborn 1978; Mura 1991; Hamr and Appleton 1991; Thiery 1991), or by hatching at different temperatures or developing at different rates (Thiery 1991; Hathaway and Simovich 1996).

Dispersal - The primary historic dispersal method for the vernal pool tadpole shrimp and vernal pool fairy shrimp likely was large scale flooding resulting from winter and spring rains which allowed the animals to colonize different individual vernal pools and other vernal pool complexes (pers. comm., J. King, UC Davis, 1995). This dispersal is currently non-functional due to the construction of dams, levees, and other flood control measures, and widespread urbanization within significant portions of the range of this species. Waterfowl and shorebirds may now be the primary dispersal agents for vernal pool tadpole shrimp and vernal pool fairy shrimp. The eggs of these crustaceans are either ingested (Krapu 1974; Swanson *et al.* 1974; Driver 1981; Ahl 1991) and/or adhere to the legs and feathers where they are transported to new habitats. Cysts may also be dispersed by a number of other species, such as salamanders, toads, cattle, and humans (Eriksen and Belk 1999).

Vernal pool crustaceans are often dispersed from one pool to another through surface swales that connect one vernal pool to another. These dispersal events allow for genetic exchange between pools and create a population of animals that extends beyond the boundaries of a single pool. Instead, populations of vernal pool crustaceans are defined by the entire vernal pool complex in which they occur (Simovich *et al.* 1992; King 1996). These dispersal events also allow vernal pool crustaceans to move into pools with a range of sizes and depths. In dry years, animals may only emerge in the largest and deepest pools. In wet years, animals may be present in all pools, or in only the smallest pools. The movement of vernal pool crustaceans into vernal pools of different sizes and depths allows these species to survive the environmental variability that is characteristic of their habitats.

Reasons for Decline and Threats to Survival - The genetic characteristics of these species, as well as ecological conditions, such as watershed continuity, indicate that populations of vernal pool crustaceans are defined by pool complexes rather than by individual vernal pools (Fugate 1992). Therefore, the most accurate indication of the distribution and abundance of these species is the number of inhabited vernal pool complexes. The pools and, in some cases, pool complexes supporting these species may be small. Human-caused and unforeseen natural catastrophic events such as long-term drought, non-native predators, off-road vehicles, pollution, berming,

and urban development, threaten their extirpation at some sites. Vernal pool fairy shrimp and vernal pool tadpole shrimp continue to be threatened by all of the factors which led to the original listing of this species, primarily habitat loss through agricultural conversion and urbanization (CNDDB 2004).

Environmental Baseline

Giant Garter Snake

Status with Respect to Recovery - Surveys over the last two decades have located the snake as far north as the Butte Basin in the Sacramento Valley. Currently, the Service recognizes 13 separate populations of snake, with each population representing a cluster of discrete locality records (Service 1999b). The 13 extant population clusters largely coincide with historical riverine flood basins and tributary streams throughout the Central Valley (Hansen 1980, Brode and Hansen 1992): (1) Butte Basin, (2) Colusa Basin, (3) Sutter Basin, (4) American Basin, (5) Yolo Basin-Willow Slough, (6) Yolo Basin-Liberty Farms, (7) Sacramento Basin, (8) Badger Creek-Willow Creek, (9) Caldoni Marsh, (10) East Stockton-Diverting Canal and Duck Creek, (11) North and South Grasslands, (12) Mendota, and (13) Burrell-Lanare. These populations span the Central Valley from just southwest of Fresno (Burrell-Lanare) north to Chico (Hamilton Slough). The 11 counties where the snake is still presumed to occur are: Butte, Colusa, Glenn, Fresno, Merced, Sacramento, San Joaquin, Solano, Stanislaus, Sutter and Yolo.

The draft recovery plan for the snake subdivided its historic range into four recovery units (Service 1999b). These are: (1) the Sacramento Valley unit, extending from the vicinity of Red Bluff south to the confluence of the Sacramento and Feather Rivers; (2) the Mid-Valley unit, extending from the American and Yolo Basins south to Duck Creek near the City of Stockton; (3) the San Joaquin Valley unit, extending south from Duck Creek to the Kings River; and (4) the South Valley unit, extending south of the Kings River to the Kern River Basin.

Currently, only the Sacramento Valley Recovery Unit at the northern end of the species' range is known to support relatively large, stable populations of the snake. This unit contains three populations: Butte Basin, Colusa Basin, and Sutter Basin, which includes the Gilsizer Slough and Robbins area subpopulations. This recovery unit includes a large amount of suitable habitat in protected areas on state refuges and refuges of the Sacramento National Wildlife Refuge (NWR) Complex in the Colusa and Sutter Basins and along waterways associated with rice farming (Service 1999b). While populations within the unit have some protection on refuge and other public lands, such as the Sacramento NWR Complex lands of Colusa NWR, Delevan NWR, and Sutter NWR, snakes are subject to flooding and mortality from predatory fish and birds, vehicular traffic, agricultural practices, and maintenance of water channels. The populations within this unit are widely distributed and mostly restricted to unnatural agricultural water delivery and drainage facilities associated with rice fields, and habitat corridors connecting populations or subpopulations are not present and/or protected.

The Mid-Valley Recovery Unit, directly to the south of the Sacramento Valley Recovery Unit, includes seven populations: American Basin, Yolo Basin-Willow Slough, Yolo Basin-Liberty

Farms, Sacramento Area, Badger Creek/Willow Creek, Caldoni Marsh, and East Stockton. The status of the seven snake populations in the Mid-Valley Recovery Unit is very uncertain. The East Stockton population may be extirpated, and is not considered recoverable as a result of urban encroachment into habitat (Service 1999b). Five of the remaining six populations within this recovery unit are very small, highly fragmented and isolated, and, except for the Badger Creek/Willow Creek population, are also threatened by urbanization. This latter population is within a small isolated area. Within this recovery unit, only the American Basin population supports a sizeable snake population, which is largely dependent upon rice lands. The American Basin population, although threatened by urban development, receives protection form the approved Metro Air Park and the Natomas Basin Habitat Conservation Plans (HCPs), which share a regional strategy to maintain a viable snake population in the basin.

The remaining two recovery units are located to the south in the San Joaquin Valley, where the best available data indicate that the snake's status is precarious. The San Joaquin Valley Recovery Unit contains three historic snake populations: North and South Grasslands; Mendota Area; and Burrell/Lanare Area (Service 1999b). This recovery unit formerly supported large snake populations, but numbers have declined severely in recent decades, and recent survey efforts indicate that numbers are very low compared to Sacramento Valley populations. Recent studies in the San Joaquin Valley indicate that snake numbers in this recovery unit have declined more dramatically than suitable habitat, suggesting that other factors, such as interrupted water supply, poor water quality, and contaminants, may be pose the greater threats to the snake in this unit (Hansen 1996). No surviving snake populations are known from the fourth recovery unit, the South Valley Recovery Unit, at the southern end of the snake's historic range. This unit includes only extirpated populations, including the historic but lost habitats of Tulare Lake and Buena Vista Lake.

Current Research Related to Recovery Efforts - Since April of 1995, the BRD has further documented occurrences of snakes within some of the 13 populations identified in the final rule. BRD has studied populations of snakes at the Sacramento, Delevan, and Colusa NWRs, in the Colusa Basin Drain within the Colusa Basin, at Gilsizer Slough within the Sutter Basin, at the Badger Creek area of the Cosumnes River Preserve within the Badger Creek/Willow Creek area, and in the Natomas Basin within the American Basin (Hansen 2003, 2004; Wylie 1999, 2003; Wylie *et al.* 2000a, 2000b, 2003a, 2003b, 2004). These populations of snakes represent the largest extant populations. With the exception of the American Basin, these areas are largely protected from many of the threats to the species. Outside of protected areas, snakes in these population clusters are still subject to all threats identified in the final rule. The remaining nine population clusters identified in the final rule are distributed discontinuously in small, isolated patches, and are vulnerable to extirpation by stochastic environmental, demographic, and genetic processes. Until recently, there were no post-1980 sightings of snakes from Stockton and southward, and surveys of historic localities conducted in 1986 did not detect any snakes (Hansen 1988; Service 1999b). Since 1995, however, surveys conducted by CDFG in cooperation with BRD in the Grasslands Area of the San Joaquin Valley have detected snakes, but in numbers much lower than those found in the Sacramento Valley populations. These observations indicate that snakes are still extant in at least three locations in the San Joaquin Valley, but probably in extremely low numbers (Service 1999b). All 13 population clusters are

isolated from each other with no protected dispersal corridors. Opportunities for re-colonization of small populations that may become extirpated are unlikely given the isolation from larger populations and lack of dispersal corridors between them.

The draft recovery criteria require multiple, stable populations within each of the four recovery units, with subpopulations well-connected by corridors of suitable habitat. This entails that corridors of suitable habitat between existing snake populations be maintained or created to enhance population interchange, as a counter to threats to the species (Service 1999b). Currently, only the Sacramento Valley Recovery Unit, at the northern end of the species' range, is known to support relatively large, stable populations. Habitat corridors connecting populations or subpopulations, even for the Sacramento Valley Recovery Unit, are not present and/or protected. Overall, the future availability of habitat in the form of canals, ditches, and flooded fields are subject to market-driven crop choices, agricultural practices, and land use, and are, thus, uncertain and unpredictable.

The Snake in the Proposed Action Area. The proposed project is included within the Sacramento Basin population of the snake, within the Mid-Valley Recovery Unit identified by the snake recovery team (Service 1999b). The proposed project is located northeast of the Stone Lakes NWR and east of Beach Lake, on and/or adjacent to the 2,650-acre Bufferlands complex. This complex provides a large area of open space and phenomenal wildlife habitat within the rapidly developing are of Sacramento County. Over 375 ac of wetlands, including 247 ac of managed seasonal wetlands, can be found on the Bufferlands. Perennially wet areas on this complex include several creeks (including Laguna Creek), channels, lakes, ponds, and marshes. These types of wetlands support many special status wildlife species, including the snake.

Morrison Creek and Unionhouse Creek both support suitable habitat for the snake. The California Natural Diversity Data Base (CNDDB) (2004) lists one observation of the snake in Morrison Creek within three miles of the proposed project alignment. Morrison Creek transverses the proposed project alignment. The Service is also aware of a number of other snake sightings in the vicinity of the proposed project (CNDDB 2004), indicating a large snake population inhabits the area. These locality records include Elk Grove Creek, Snodgrass Slough, Stone Lake, Beach Lake, Laguna Creek, Willow-Badger Creeks, and other locations within the Sacramento Basin. The action area contains habitat components that can be used by the snake for feeding, resting, mating, and other essential behaviors, as well as a movement corridor. Because of the biology and ecology of the snake, the presence of suitable habitat along the proposed project's alignment, and observations of the species, the Service has determined that the snake is reasonably certain to occur within the action area.

Factors Affecting the Snake within the Action Area - The Sacramento Basin snake population unit is subject to the effects of a number of projects. Numerous development projects have been constructed in or near snake habitat in this rapidly urbanizing area. Any remaining populations are vulnerable to secondary effects of urbanization, such as increased predation by house cats and increased vehicular mortality. Most documented localities have been adversely impacted by development, including freeway construction, flood control projects, and commercial development. Several former localities are known to have been lost and/or depleted to the extent

that continued viability is in question (Brode and Hansen 1992). The scarcity of remaining suitable habitat, flooding, stochastic processes, and continued threats of habitat loss pose a severe threat to this population unit.

Construction activities associated with the implementation of the proposed project are likely to adversely affect the snake. Due to the known presence of the snake in Morrison Creek, the biology and ecology of the snake, and the widespread presence of highly suitable habitat, the Service has determined that the snake is reasonably certain to occur within the action area. This area is relatively reliable as snake habitat and as a movement corridor. The associated creeks and channels have long served this function, and, by virtue of their location, are likely to continue to provide wetland habitat for the snake with upland habitat on the adjacent banks. Therefore, the proposed project is likely to adversely affect the species through permanent and temporary loss of habitat.

A number of State, local, private, and unrelated Federal actions have occurred within the action area and adjacent region affecting the environmental baseline of the species. Some of these projects have been subject to prior section 7 consultation. These actions have resulted in both direct and indirect effects to snake habitat within the region.

Agricultural and flood control activities may decrease and degrade the remaining habitat throughout the snake's extant range. On-going agricultural activities affect the environmental baseline for the snake, and are largely not subject to section 7 consultation. Some agriculture, such as rice farming, can provide valuable seasonal foraging and upland habitat for the snake. Although rice fields and agricultural waterways can provide habitat for the snake, agricultural activities such as waterway maintenance, weed abatement, rodent control, and discharge of contaminants into wetlands and waterways can degrade snake habitat and increase the risk of snake mortality (Service 1999b). On-going maintenance of agricultural waterways can also eliminate or prevent establishment of snake habitat, eliminate food resources for the snake, and fragment existing habitat and prevent dispersal of snakes (Service 1999b).

Flood control and maintenance activities which can result in snake mortality and degradation of habitat include levee construction, stream channelization, and the rip-rapping of streams and canals (Service 1999b). Flood control programs are administered by the U.S. Army Corps of Engineers (Corps), and the Corps typically has consulted on previous projects and is expected to continue to do so on future projects. The ongoing nature of these activities and the administration under various programs, however, makes it difficult to determine the continuing and accumulative effects of these activities.

In addition to projects already discussed, projects affecting the environment in the action area include transportation projects with Federal, county or local involvement. The FHWA and/or the Corps have consulted with the Service on the issuance of wetland fill permits for several transportation-related projects within the Sacramento Basin that affected snake habitats. The direct effect of these projects is often small and localized, but the effects of transportation projects which improve access can indirectly affect snakes by facilitating further development of habitat in the area and by increasing snake mortality via vehicles are not quantifiable.

Valley Elderberry Longhorn Beetle

Status with Respect to Recovery – When the beetle was listed as threatened in 1980, the species was known from less than ten localities along the American River, the Merced River, and Putah Creek. By the time the *Valley Elderberry Longhorn Beetle Recovery Plan* was prepared in 1984, additional species localities had been found along the American River and Putah Creek. As of 2004, the CNDDB included 215 occurrences for this species in 23 counties throughout the Central Valley, from a location along the Sacramento River in Shasta County southward to an area along Caliente Creek in Kern County (CNDDB 2004). The beetle continues to be threatened by habitat loss and fragmentation, invasion by Argentine ants (*Linepithema humile*), and possibly other factors such as pesticide drift, exotic plant invasions, and grazing.

Factors Affecting the Beetle within the Action Area –

Habitat Loss: Habitat loss has been ranked as the single greatest threat to biodiversity in the United States (Wilcove *et al.* 1998). In the final rule to list the beetle as threatened, habitat destruction was cited as the primary factor contributing to the need to list the species (45 **FR** 52803). At the time the species was listed, its habitat had largely disappeared throughout much of its former range due to agricultural conversion, levee construction, and stream channelization. The recovery plan reiterated that the primary threat to the beetle was loss and alteration of habitat by agricultural conversion, livestock overgrazing, levee construction, stream and river channelization, removal of riparian vegetation, riprapping of shoreline, plus recreational, industrial and urban development (Service 1984).

Some accounts state that the Sacramento Valley, as of 1848, supported approximately 775,000 to 800,000 acres of riparian forest (Smith 1977; Katibah 1984). No comparable estimates are available for the San Joaquin Valley. Based on early soil maps, however, more than 921,000 acres of riparian habitat are believed to have been present throughout the Central Valley under pre-settlement conditions (Katibah 1984). Another source estimates that of approximately five million acres of wetlands in the Central Valley in the 1850s, approximately 1,600,000 acres were riparian wetlands (Warner and Hendrix 1985; Frayer *et al.* 1989).

Extensive destruction of California's Central Valley riparian forests has occurred during the last 150 years due to expansive agricultural and urban development (Katibah 1984; Smith 1977; Thompson 1961; Roberts *et al.* 1977). Since colonization, these forests have been "...modified with a rapidity and completeness matched in few parts of the United States" (Thompson 1961). As of 1849, the rivers and larger streams of the Central Valley were largely undisturbed. They supported continuous bands of riparian woodland four to five miles in width along some major drainages such as the lower Sacramento River, and generally about two miles wide along the lesser streams (Thompson 1961). Most of the riverine floodplains supported riparian vegetation to about the 100-year flood line (Katibah 1984). A large human population influx occurred after 1849, however, and much of the Central Valley riparian habitat was rapidly converted to agriculture and used as a source of wood for fuel and construction to serve a wide area (Thompson 1961). By as early as 1868, riparian woodland had been severely affected in the Central Valley, as evidenced by the following excerpt:

> This fine growth of timber which once graced our river [Sacramento], tempered the atmosphere, and gave protection to the adjoining plains from the sweeping winds, has entirely disappeared - the woodchopper's axe has stripped the river farms of nearly all the hard wood timber, and the owners are now obliged to rely upon the growth of willows for firewood. (Cronise 1868 *in* Thompson 1961).

The clearing of riparian forests for fuel and construction made this land available for agriculture (Thompson 1961). Natural levees bordering the rivers, once supporting vast tracts of riparian habitat, became prime agricultural land (Thompson 1961). As agriculture expanded in the Central Valley, needs for increased water supply and flood protection spurred water development and reclamation projects. Artificial levees, river channelization, dam building, water diversion, and heavy groundwater pumping have further reduced riparian habitats to small, isolated fragments (Katibah 1984). In recent decades, these riparian areas have continued to decline as a result of ongoing agricultural conversion as well and urban development and stream channelization. As of 1989, there were over 100 dams within the Central Valley drainage basin, as well as thousands of miles of water delivery canals and stream bank flood control projects for irrigation, municipal and industrial water supplies, hydroelectric power, flood control, navigation, and recreation (Frayer *et al.* 1989). Riparian forests in the Central Valley have dwindled to discontinuous strips of widths currently measurable in yards rather than miles.

Between 1980 and 1995, the human population in the Central Valley grew by 50 percent, while the rest of California grew by 37 percent. The Central Valley's population was 4.7 million in 1999, and it is expected to more than double by 2040. The American Farmland Trust estimates that by 2040 more than one million cultivated acres will be lost and 2.5 million more put at risk (Ritter 2000). With this growing population in the Central Valley, increased development pressure is likely to result in continuing loss of riparian habitat.

Based on a CDFG riparian vegetation distribution map, only about 102,000 acres out of an estimated 922,000 acres of Central Valley riparian forest remain (Katibah 1984). This represents a decline in acreage of approximately 89 percent as of 1979 (Katibah 1984). More extreme figures were given by Frayer *et al.* (1989), who reported that approximately 85 percent of all wetland acreage in the Central Valley was lost before 1939; and that from 1939 to the mid-1980s, the acreage of wetlands dominated by forests and other woody vegetation declined from 65,400 acres to 34,600 acres. Differences in methodology may explain the differences between the studies. In any case, the historical loss of riparian habitat in the Central Valley strongly suggests that the range of the beetle has been reduced and its distribution greatly fragmented. Loss of non-riparian habitat where elderberry occurs (*e.g.* savanna and grassland adjacent to riparian areas, oak woodland, mixed chaparral-woodland), and where the beetle has been recorded (Barr 1991), suggests further reduction of the beetle's range and increased fragmentation of its upland habitat.

A number of studies have focused on riparian habitat loss along the Sacramento River, which supports some of the densest known populations of the beetle. Approximately 98 percent of the middle Sacramento River's historic riparian vegetation was believed to have been extirpated by 1977 (DWR 1979). The State Department of Water Resources estimated that native riparian

habitat along the Sacramento River from Redding to Colusa decreased 34 percent from 27,720 acres to 18,360 acres between 1952 and 1972 (McGill 1975; Conrad *et al.* 1977). The average rate of riparian loss on the middle Sacramento River was 430 acres per year from 1952 to 1972, and 410 acres per year from 1972 to 1977. In 1987, riparian areas as large as 180 acres were observed converted to orchards along this river (McCarten and Patterson 1987). There is no comparable information on the historic loss of non-riparian beetle habitat, such as elderberry savanna and other vegetation communities where elderberry occurs, including oak or mix-chaparral woodland, or grasslands adjacent to riparian habitat. All natural habitats throughout the Central Valley, however, have been heavily impacted within the last 200 years (Thompson 1961), and it can, therefore, be assumed that non-riparian beetle habitat also has suffered a widespread decline.

Habitat Fragmentation: But while habitat loss is clearly a large factor leading to the species' decline, other factors are likely to pose significant threats to the long-term survival of the beetle. Approximately a nine percent of 79 Central Valley sites that supported beetle habitat in 1991 no longer supported beetle habitat in 1997 decrease over a six year period in the number of sites with beetle habitat. Only approximately 20 percent of riparian sites with elderberry observed by Barr (1991) and Collinge *et al.* (2001) were found to support beetle populations. Jones & Stokes (1988) found that only 65 percent of 4,800 riparian acres on the Sacramento River has evidence of beetle presence. The fact that a large percentage of apparently suitable habitat is unoccupied suggests that the beetle is limited by factors other than habitat availability, such as habitat quality or limited dispersal ability. The beetle's current distribution is patchy throughout the remaining habitat of the Central Valley from Redding to Bakersfield.

Destruction of riparian habitat in central California has resulted not only in a loss of acreage, but also in habitat fragmentation. Habitat fragmentation can be an important factor contributing to species declines because (1) it divides a large population into two or more small populations that become more vulnerable to direct loss, inbreeding depression, genetic drift, and other problems associated with small populations, (2) it limits a species' potential for dispersal and colonization, and (3) it makes habitat more vulnerable to outside influences by increasing the edge-to-interior ratio (Primack 1998).

Barr (1991) found that small isolated habitat remnants were less likely to be occupied by beetles than larger patches, indicating that beetle subpopulations are extirpated from small habitat fragments. Barr (1991) and Collinge *et al.* (2001) consistently found beetle exit holes occurring in clumps of elderberry bushes rather than isolated bushes, suggesting that isolated shrubs do not typically provide long-term viable habitat for this species. The beetle appears to be only locally common, *i.e.*, found in population clusters which are not evenly distributed across available elderberry shrubs. Plants used by the beetle usually show evidence of repeated use over a period of several years, but sometimes only one or two exit holes are present. Similar observations on the clustered distributions of exit holes were made by Jones & Stokes (1988). Barr (1991) noted that elderberry shrubs and trees with many exit holes were most often large, mature plants; young stands were seldom occupied.

The beetle, a specialist on elderberry plants, tends to have small population sizes and to occur in low densities (Barr 1991; Collinge *et al.* 2001; Service 1984), and studies suggest that the beetle is unable to re-colonize drainages where the species has been extirpated because of its limited dispersal ability (Huxel 2000; Barr 1991; Collinge *et al.* 2001). Low density and limited dispersal capability cause the beetle to be vulnerable to the negative effects of the isolation of small subpopulations due to habitat fragmentation. With extensive riparian habitat loss and fragmentation, these naturally-small beetle populations are broken into even smaller and more isolated populations. Once a small beetle population has been extirpated from an isolated habitat patch, the species may be unable to re-colonize this patch if it is unable to disperse from nearby occupied habitat. Insects with limited dispersal and colonization abilities may persist better in large habitat patches than small patches because small fragments may be insufficient to maintain viable populations and the insects may be unable to disperse to more suitable habitat (Collinge 1996). Recent research indicates that isolated habitats unoccupied by the beetle remain so (Barr 1991; Collinge *et al.* 2001).

Species that characteristically have small population sizes, such as habitat specialists, are more likely to become extinct than species that typically have large populations (Primack 1998), and populations of species that naturally occur at lower density become extinct more rapidly than do those of more abundant species (Bolger *et al.* 1991). Small, isolated subpopulations are susceptible to extirpation from random demographic, environmental, and/or genetic events (Shaffer 1981; Lande 1988; Primack 1998). While a large area may support a single large population, the smaller subpopulations that result from habitat fragmentation may not be large enough to persist over a long time period. As a population becomes smaller, it tends to lose genetic variability through genetic drift, leading to inbreeding depression and a lack of adaptive flexibility. Smaller populations also become more vulnerable to random fluctuations in reproductive and mortality rates, and are more likely to be extirpated by random environmental factors.

Habitat fragmentation not only isolates small populations, but also increases the interface between habitat and urban or agricultural land, increasing negative edge effects such as the invasion of non-native species (*e.g.* the Argentine ant; *see* Huxel 2000), pesticide contamination (Barr 1991), and livestock grazing (Service 1984). These threats are described in further detail below.

Invasive Species: Recent evidence indicates that the invasive Argentine ant poses a risk to the long-term survival of the beetle. Surveys along Putah Creek found beetle presence where Argentine ants were not present or had only recently colonized, and beetle absence from otherwise suitable sites where Argentine ants had become established (Huxel 2000). The Argentine ant has negatively affected populations of other native arthropod species (Holway 1995; Ward 1987). Predation on eggs, larvae, and pupae are the most likely impacts these ants have on the beetle. In Portugal, Argentine ants have been found to be significant egg predators on the eucalyptus borer (*Phorocantha semipunctata*), another cerambycid like the beetle. Egg predation on the beetle could lead to local extirpations, as indicated by a population viability study that suggested that egg and juvenile mortality are significant factors affecting the probability of extinction for the beetle (Huxel and Collinge, in prep.). The Argentine ant has

been expanding its range throughout California since its introduction in 1907, especially in riparian woodlands associated with perennial streams (Holway 1995; Ward 1987). Huxel (2000) states that, given the potential for Argentine ants to spread with the aid of human activities such as movement of plant nursery stock and agricultural products, this species may come to infest most drainages in the Central Valley along the valley floor where the beetle is found.

Competition from invasive exotic plants, such as giant reed (*Arundo donax*), negatively affects riparian habitat supporting the beetle. Giant reed, a native of Asia, has become a serious problem in California riparian habitats, forming dense, homogenous stands essentially devoid of wildlife (Rieger and Kreager 1989). This species grows up to 2.5 inches per day and yields 8.3 tons of oven-dry cane per acre (Rieger and Kreager 1989; Perdue 1958). It can tolerate drought, floods, and extreme temperatures, and is not significantly affected by insects, disease, herbivory, fire, or mechanical disturbance. It has an extensive root system allowing it to resprout rapidly after any disturbance and out-compete native riparian vegetation. Giant reed also introduces a more frequent fire cycle into the riparian ecosystem, disrupting natural riparian dynamics and eventually forming homogenous climax communities. The extent to which giant reed has affected elderberry shrubs and the beetle specifically, however, has not been studied.

Pesticide Contamination: Direct spraying and drift of pesticide, including herbicides and/or insecticides, in or near riparian areas (which is done to control mosquitoes, crop diseases, invasive and/or undesirable plants, or other pests) is likely to adversely affect the beetle and its habitat. Although there have been no studies specifically focusing on the effects of pesticides on the beetle, evidence suggests that the species is likely to be affected by pesticides. As of 1980, the prevalent land use adjacent to riparian habitat in the Sacramento Valley was agriculture, even in regions where agriculture was not generally the most common land use (Katibah 1984); therefore, the species is likely vulnerable to pesticide contamination from adjacent agricultural practices. Recent studies of major rivers and streams documented that 96 percent of all fish, 100 percent of all surface water samples, and 33 percent of major aquifers contained one or more pesticides at detectable levels (Gilliom 1999). Pesticides were identified as one of the 15 leading causes of impairment for streams included in the section 303(d) lists of impaired waters of the Federal Water Pollution Control Act, as amended (Clean Water Act). As the beetle occurs primarily in riparian habitat, the contamination of rivers and streams affects this species and its habitat. Pesticides have been identified as one of a number of potential causes of the decline of both pollinator species declines and other insects beneficial to agriculture (Ingraham *et al.* 1996); therefore, it is likely that the beetle, typically occurring adjacent to agricultural lands, has suffered a similar decline due to pesticides.

Livestock Grazing: Livestock grazing damages or destroys elderberry plants and inhibits regeneration of seedlings. Cattle readily forage on new elderberry growth, which may explain the absence of beetles at manicured elderberry stands (Service 1984). Habitat fragmentation exacerbates problems related to exotic species invasion and livestock overgrazing by increasing the edge to interior ratio of habitat patches, facilitating penetration of these influences.

To summarize, the Service believes that the beetle, though wide-ranging, is in long-term decline due to widespread alteration and fragmentation of its riparian habitats, and to a lesser extent, its

upland habitats, by human activities. Long-term protection of habitat for the beetle would be provided by the creation and protection of conservation areas and the implementation of various protective measures.

Distribution of Habitat within the Proposed Action Area – A total of 33 elderberry shrubs are located within the proposed project action area. These are located on the Bufferlands property, along Franklin Boulevard, in annual grassland. These shrubs, however, are located within 0.75 mile of a riparian area (*i.e.,* Morrison Creek). These shrubs were planted by SRCSD biologists in 1995 as part of the Trail of Trees project; they were not planted as mitigation for other projects (Jones & Stokes 2003). While exit holes are not evident on these shrubs, recent studies indicate that the beetle may be present in elderberry shrubs with no physical evidence of exit holes. Approximately 70 stems greater than one inch in diameter at ground level would be adversely affected by the proposed project. Based on this information as well as the fact that suitable habitat for the beetle occurs in the immediate area of the proposed project, the Service has determined that the beetle is reasonably certain to inhabit the proposed project's action area.

Vernal Pool Crustaceans

Historically, vernal pools and vernal pool complexes occurred extensively throughout the Sacramento Valley of California. Conversion of vernal pools and vernal pool complexes, however, has resulted in a 91 percent loss of vernal pool resources in California (State of California 2003d). By 1973, between 60 and 85 percent of the area within the Central Valley that once supported vernal pools had been destroyed (Holland 1978). In subsequent years, threats to this habitat type have continued and resulted in a substantial amount of vernal pool habitat being converted for human uses in spite of Federal regulations implemented to protect wetlands. For example, between 1987 and 1992, 467 acres of wetlands within the Sacramento area were filled pursuant to Nationwide Permit 26 (Service 1992). A majority of those wetlands losses involved vernal pools, the endemic habitat of the vernal pool tadpole shrimp, the vernal pool fairy shrimp and slender and Sacramento Orcutt grasses. It is estimated that within 20 years human activities will destroy 60 to 70 percent of the remaining vernal pools (Coe 1988).

In addition to direct habitat loss, the two shrimp populations have been and continue to be highly fragmented throughout their ranges due to conversion of natural habitat for urban and agricultural uses. Fragmentation results in small isolated shrimp populations. Ecological theory predicts that such populations will be highly susceptible to extirpation due to chance events, inbreeding depression, or additional environmental disturbance (Gilpin and Soulé 1988; Goodman 1987a, Goodman 1987b). If an extirpation event occurs in a population that has been fragmented, the opportunities for re-colonization would be greatly reduced due to physical (geographic) isolation from other (source) populations.

Human population growth in Sacramento County has steadily increased. On the average, Sacramento County has experienced an annual population increase of 1.38 percent for the period between 1991 and 1999 (Service 2000). For the period between 1990 and 2000, population growth in Sacramento County increased 17.5 percent, with an average annual growth rate of 17.5 percent (State of California 2002). This annual growth appears to be increasing, as

demonstrated by the 2.63 percent and 2.2 percent increases in population growth in 2001 and 2002, respectively (State of California 2003a, 2003b). Increased housing demand and urban development accompany the population growth in Sacramento County. Between 1990 and 2000, housing units in Sacramento County increased by 1.37 percent annually (State of California 2000, 2003c). Population growth and concomitant housing demand and subsequent vernal pool resource development are projected to continue. Population projections for Sacramento County are expected to increase above 2000 levels by 19.7 percent in 2010, by 28 percent in 2015, and by 37.5 percent in 2020 (State of California 2001).

Sacramento County represents important, high quality habitat for the two shrimp populations by providing large, nearly contiguous areas of relatively undisturbed vernal pool habitat. Sacramento County contains the greatest number of occurrences of vernal pool tadpole shrimp within the range of the species, and also is one of the two counties with the greatest number of occurrences of vernal pool fairy shrimp within the range of the species. Sacramento County contains 58 (17 percent) out of the total of 342 reported occurrences of vernal pool fairy shrimp, and 58 (34 percent) out of the total of 173 reported occurrences of vernal pool tadpole shrimp (CNDDB 2004). Further, Sugnet and Associates (1993) reported that of 3,092 "discrete populations" checked, only 345 locations, or about 11 percent of all locations checked, were found to support the vernal pool tadpole shrimp. Of these 345 locations supporting the vernal pool tadpole shrimp, 219 (63 percent) were in Sacramento County. Further, of the 3,092 locations checked, 178 locations (6 percent) were found to support the vernal pool fairy shrimp. Of this total, 63 locations (35 percent) were within Sacramento County.

The vernal pool tadpole shrimp and vernal pool fairy shrimp are imperiled by a variety of human-caused activities. Their habitats have been lost through direct destruction and modification due to filling, grading, disking, leveling, and other activities. In addition, vernal pools have been imperiled by a variety of anthropogenic modifications to upland habitats and watersheds. These activities, primarily urban development, water supply/flood control projects, land conversion for agriculture, off-road vehicle use, certain mosquito abatement measures, and pesticide/herbicide use can lead to disturbance of natural flood regimes, changes in water table depth, alterations of the timing and duration of vernal pool inundation, introduction of non-native plants and animals, and water pollution. These indirect effects can result in adverse effects to vernal pool species.

A number of State, local, private, and unrelated Federal actions have occurred within the project area and adjacent region affecting the environmental baseline of these species. Some of these projects have been subject to prior section 7 consultation. Based on an informal review, the Service has issued approximately 157 biological opinions to Federal agencies on proposed projects in Sacramento County that have adversely affected the shrimp species since the two species were proposed to be listed in 1994. This total does not reflect the formal consultations that were withdrawn, those that are suspended, those that have insufficient information to conclude an effects analysis, those that were amended, or ones that the Service issued a conference opinion. No State of California actions that have taken place within Sacramento County have adversely affected the species in the action area. Although these proposed projects in Sacramento County have eliminated vernal pools and vernal pool complexes, the offsetting compensating measures are designed to minimize the effects of take of these species resulting in

both negative and positive effects to the species. Thus, the trend for the two vernal pool species within the county is most likely static.

The actions listed above have resulted in both direct and indirect impacts to vernal pools within the region, and have contributed to the loss of vernal pool tadpole shrimp and vernal pool fairy shrimp populations. Although a reduction of the two shrimp populations has not been quantified, the acreage of lost habitat continues to grow.

In south Sacramento County, the Urban Services Boundary (USB) is a planning boundary that coincides with the areas north of the Cosumnes River/Deer Creek drainage system. Between 1993 and 2000, an estimated 14,950 acres were converted to urban development within the USB (pers. comm., D. Gifford, CDFG, 2004), based on an analysis of the California Department of Water Resources mapping data. An independent analysis of urban growth in Sacramento County estimated that an estimated 22,000 acres were converted between 1990 and 2000, averaging 2,200 acres per year (pers. comm., Richard Radmacher, Sacramento County, 2004). As of 1998 (the most recent year for which vernal pool mapping from aerial photographs is available), there remained an estimated 23,533 acres of vernal pool grasslands within the USB, supporting approximately 946 acres of wetted vernal pool acreage (pers. comm.., Lora Konde, CDFG, 2003).

Vernal pool complexes, occurring north of the Cosumnes River/Deer Creek drainage and within the USB, contain a high density of occupied pool of both vernal pool tadpole shrimp and vernal pool fairy shrimp. There are 31 known occurrences of vernal pool tadpole shrimp inside the USB, compared to 17 occurrences outside the USB (CNDDB 2004). There are 25 known occurrences of vernal pool fairy shrimp inside the USB, compared to 18 occurrences outside the USB (CNDDB 2004). The data from the CNDDB do not reflect additional reported records in the Sunrise-Douglas area, where 137 occurrences of vernal pool tadpole shrimp and 46 occurrences of vernal pool fairy shrimp, and 2 occurences of orcutt grasses (2 slender Orcutt grass and 4 Sacramento Orcutt grass) are reported (pers. comm., Arnold Roessler, Service, 2004).

The vernal pools in Sacramento County are classified as young-terrace, old-terrace, and mudflow types. Old-terrace is a rapidly disappearing habitat type in Sacramento County that consists of ancient river channel deposits that were laid down from 600,000 to more than one million years ago by the American River. By comparison, young-terrace formation dates from 100,000 to 200,000 years ago. Old-terrace formation generally has a higher density of vernal pools, deeper pools, and a greater number of special status plants and crustaceans than young-terrace formations. Some special status species found in old-terrace pools may have evolved from species inhabiting shores of ancient lakes in the Central Valley. Old-terrace pools may have served as refugia for these species as the lakes disappeared (Jones & Stokes 1990). Sacramento County contains an estimated 764 wetted acres of vernal pools on low terrace, 1,390 wetted acres of vernal pools on high terrace, and 189 wetted acres of vernal pools on volcanic mudflow vernal pools.

Several areas containing old-terrace formation have been protected for their high quality vernal pool habitat and high concentration of special status species populations by the Sacramento

Valley Conservancy (SVC). This potential preserve area, the SVC's Vernal Pool Prairie Preserve, would cover 2,000 to 3,000 acres and supports a variety of special status plants and animals on relatively undisturbed grasslands containing young and old terrace formations and northern hardpan vernal pools. Within the proposed Prairie Preserve, areas already protected include the Arroyo Seco Mitigation Bank, the Excelsior 184 parcel, and the Sacramento County-owned Multi Cultural Park; outside of the proposed Prairie Preserve, the Sunrise Douglas Preservation Bank, and a portion of Howard Ranch are protected.

There are 342 records of vernal pool fairy shrimp and 173 records of vernal pool tadpole shrimp recorded in the CNDDB for the entire state of California (CNDDB 2004). Of these records, 58 vernal pool fairy shrimp records and 58 vernal pool tadpole shrimp records are from Sacramento County (CNDDB 2004). Vernal pool fairy shrimp and vernal pool tadpole shrimp have both been observed in wetlands throughout the Sunrise Douglas area.

Vernal Pool Crustacean Presence in the Proposed Action Area - Vernal pool fairy shrimp and vernal pool tadpole shrimp have both been observed in wetlands throughout the SRCSD's Bufferlands (Jones & Stokes 2002), which is where the proposed project is located. In the rapidly developing county of Sacramento, the Bufferlands provide a large area of open space and phenomenal wildlife habitat. Over 375 ac of wetlands, including 247 ac of managed seasonal wetlands, can be found on the 2,650 ac Bufferlands complex. Over 20 ac of delineated vernal pools, which harbor federally listed vernal pool crustaceans, are also found in this complex. Based on this information as well as the fact that vernal pool habitat for listed vernal pool crustaceans occurs in the immediate area of the proposed project, the Service has determined that the vernal pool tadpole shrimp and vernal pool fairy shrimp are reasonably certain to inhabit the proposed project's action area.

Effects of the Proposed Action

Giant Garter Snake

The proposed project will result in temporary effects to approximately 0.0.136 acre of aquatic and 3.108 acres of upland snake habitat occurring over two seasons. The project would permanently affect approximately 0.002 acre of aquatic and 0.077 acres of upland snake habitat. Construction activities associated with the project occurring in snake upland and aquatic habitat may harm, harass, injure, or kill snakes. These effects may be aggravated by the initiation of construction activities in the midst of the snake's reproductive season. Dewatering of portions of Morrison Creek could directly affect the snake through the loss of reproductive, basking, and foraging habitat. Further construction activities, including excavation and movement of large equipment, will remove vegetation cover and basking sites, fill or crush burrows or crevices, and decrease the prey base, and may result in the direct disturbance, displacement, injury, and/or mortality of snakes. Earthwork activities, earth surface modifications, and the staging of equipment and vehicles will also temporarily disturb upland habitats and/or obstruct snake movement. Snakes may be killed or injured by construction equipment or other vehicles accessing the project site. Restoration and re-vegetation of the project site would minimize adverse effects resulting from the temporary loss of vegetative cover.

The project proponents have proposed a number of conservation measures, such as timing restrictions and worker education programs, which would minimize the effects of the proposed project on the snake.

Indirect effects are caused by or result from the proposed action, are later in time, and are reasonably certain to occur. Indirect effects may occur outside of the area directly affected by the action. Indirect effects to the snake relative to the proposed project include the temporary displacement and reduction of aquatic prey due to construction activities as well as from increased sedimentation, oils, and other hazardous materials from access roads and staging areas which could wash into drainages. Disturbance from construction activities may also cause snakes to move into or across areas of unsuitable habitat where they may be prone to higher rates of mortality from vehicles and predation.

Valley Elderberry Longhorn Beetle

The proposed action is likely to adversely affect the beetle by removing 26 elderberry shrubs located within 20 feet of the centerline of the project's proposed alignment. All of the shrubs, located in non-riparian, grassland habitat, have stems greater than one inch in diameter at ground level, for a total of 70 stems. None of these shrubs contain beetle exit holes (Jones & Stokes 2003). Transplantation of 26 shrubs will temporarily reduce the amount of habitat available to the beetle, and may harm any beetle larvae which may presently be developing within the pith. Pre-transplantation pruning of these shrubs may also reduce their ability to function in beetle dispersal from neighboring occupied sites.

An additional seven elderberry shrubs are located between 20 and 100 feet of the proposed project alignment, and therefore may be indirectly affected by construction activities. As stated on page 27 of the Biological Assessment, because "the hydrology around [these seven] shrubs is not likely to be altered by the [proposed] project and the soil within 20 feet of the shrubs will not be affected," no indirect effects were identified in the immediate vicinity of the project site. Elderberry shrubs that are within 100 feet of the centerline of the proposed alignment of the project, however, may be indirectly affected through dust from construction activities. Dust settlement on elderberry shrubs has the potential to affect the beetle by 1) clogging the spiracles of emergent adult beetles and, thus, resulting in asphyxiation of the beetles, and/or 2) coating the leaves of the shrubs and resulting in a reduction of photosynthesizing abilities of the plant.

Vernal Pool Crustaceans

The proposed project will not directly affect vernal pool crustacean habitat. Seasonal wetland 2 is located more than 250 feet from the perimeter of construction activities, and therefore, this wetland will be affected by construction activities associated with the implementation of the proposed project, either directly or indirectly. The project proponent will establish fencing around and at least 50 feet from the perimeter of seasonal wetland to ensure that this wetland is not directly affected (*i.e.,* filled, excavated, etc.) by construction activities associated with the proposed project.

Vernal pool crustacean habitat that is not directly affected but is within 250 feet of proposed construction activities will be indirectly affected by project implementation. Habitat indirectly affected includes all habitat supported by future destroyed areas and swales, and all habitat otherwise damaged by loss of watershed, human intrusion, introduced species, and pollution that will be caused by the proposed project. The proposed project activities will indirectly affect a 0.5-acre seasonal wetland. This seasonal wetland will be indirectly affected by staging and other construction activities occurring within 250 feet of it. Individual crustaceans and their cysts may be injured or killed by any of the following indirect effects:

Erosion: The ground disturbing activities in the watershed of vernal pools associated with the proposed project action area are expected to result in siltation when pools fill during the wet season following construction. Siltation in pools supporting listed crustaceans may result in decreased cyst viability, decreased hatching success, and decreased survivorship among early life history stages, thereby reducing the number of mature adults in future wet seasons. The proposed project construction activities could result in increased sedimentation transport into vernal pool crustacean habitats during periods of heavy rains.

Changes in hydrology: The biota of vernal pools and swales can change when the hydrologic regime is altered (Bauder 1986, 1987). Survival of aquatic organisms like vernal pool fairy shrimp is directly linked to the water regime of their habitat (Zedler 1987). Therefore, construction near vernal pool areas will, at times, result in the decline of local sub-populations of vernal pool organisms, including fairy shrimp and tadpole shrimp.

Introduction of non-natives: There is an increased risk of introducing weedy, non-native plants into the vernal pools both during and after project construction due to the soil disturbance from clearing and grubbing operations, and general vegetation disturbance associated with the use of heavy equipment.

Chemical contamination: The runoff from chemical contamination can kill listed species by poisoning. Oils and other hazardous materials associated with construction equipment could be conveyed into the vernal pool crustacean habitats by overland runoff during the rainy season, thereby adversely affected water quality. Many of these chemical compounds are thought to have adverse affects on all of the listed vernal pool crustaceans and/or their cysts. Individuals may be killed directly or suffer reduced fitness through physiological stress or a reduction in their food base due to the presence of these chemicals.
In addition to the adverse effects detailed above, the proposed project will contribute to a local and range-wide trend of habitat loss and degradation, the principal reasons that the vernal pool fairy shrimp and vernal pool tadpole shrimp have declined. The proposed project will continue to the fragmentation and reduction of the acreage of the remaining listed vernal pool crustacean habitat located in south Sacramento County

Interrelated Actions

Additional interrelated effects are expected from the proposed project. Interrelated actions are those that are part of a larger action and depend on the larger action for their justification. The

proposed action and the development of privately owned lands adjacent to and in the vicinity of the proposed project are interrelated because the proposed action has been proposed to alleviate the associated increase of vehicular traffic on the other existing arterial roadways connecting I-5 and State Route 99. The larger action is the continuing development in the Elk Grove and Laguna areas of south Sacramento County. The urbanization of south Sacramento County has resulted in the destruction of seasonal wetlands and the loss of habitat for listed vernal pool crustaceans. The urbanization has also resulted in the channelization and degradation of Union House and Morrison Creeks, which are suitable habitat for the snake. This development has resulted in the conversion of habitat for listed vernal pool crustaceans and the snake to incompatible uses. Additional effects include degradation of water quality, increased exposure to hazardous materials, and increased numbers of domestic animals, such as dogs and cats, that could kill snakes.

Interdependent Actions

Additional interdependent effects are expected from the proposed project. Interdependent actions are those that have no significant independent utility apart from the proposed action. The proposed action would provide access to approximately 700 to 800 acres of land located between the UPRR tracks and Freeport. Most of this land is owned by Peery-Arrillage and is known as the Delta Shores property. A small portion of the land is owned by the Stone Family Trust. Most of this privately owned land is currently in agricultural production, but the City's General Plan identifies it as a future growth area to provide residential, commercial, and economic development in the southwest area of the City. The development of this land is interdependent with the proposed action because the existing transportation network, which has less capacity than the network associated with the proposed action, would limit the development potential of the area without the proposed action.

Suitable aquatic and upland snake habitat is located along Union House and Morrison Creeks. Residential and commercial developments are likely to adversely affect the snake through increased predation by raccoons, skunks, and opossums, which are attracted by garbage and food left out for pets. Snakes may also be adversely affected by reduced water quality because urban runoff may contribute to a reduced prey base. An increase in flood frequency and severity may also be associated with the development, which could inundate over-wintering snakes or force them to seek new refugia during their inactive period.

Cumulative Effects

Cumulative effects include the effects of future State, Tribal, local or private actions that are reasonably certain to occur in the action area considered in this biological opinion. Future Federal actions that are unrelated to the proposed action are not considered in this section because they require separate consultation pursuant to section 7 of the Act.

Several large projects are occurring or proposed to occur in the Bufferlands (SRCSD 2000, 2003; Jones & Stokes 2003). These include: 1) SRCSD's Lower Northwest Interceptor project; 2) SRCSD's Sacramento Force Main, which is a portion f the Lower Northwest Interceptor project;

3) SRCSD's Laguna Interceptor Extension project,; 3) Regional Transit's Light Rail South Line Extension, which is within the alignment of the Interstate 5-Cosumnes River Boulevard Extension project; 4) Freeport's Regional Water project, which also is within the alignment of the Interstate 5-Cosumnes River Boulevard Extension project; 5) Sacramento Municipal Utility District's 24-Inch Natural Gas Pipeline project; 6) the Delta Shores project; and 7) the Stone Family Trust project. These various projects will contribute to cumulative losses of habitat for federally-listed species such as the snake, beetle, and vernal pool crustaceans across their range, particularly in south Sacramento County. While these activities may alter the habitats of the snake, beetle, and vernal pool crustaceans and can potentially harass, harm, injure, or kill these species, because they have a federal nexus, they will be subject to section 7 consultation, and, therefore, will be conducted in accordance with standard avoidance and minimization measures for the listed species.

The Service is aware of other projects currently under review by the State, county, and local authorities where biological surveys have documented the occurrence of federally-listed species. These projects include such actions as urban expansion, water transfer projects that may not have a Federal nexus, and continued agricultural development. The cumulative effects of these known actions pose a significant threat to the eventual recovery of the species.

A number of on-going and proposed projects could contribute to the affect on the snake, beetle, and vernal pool crustaceans within Sacramento County as a whole. Within this area, the predominant types of non-federal actions that might affect these species consist of residential and commercial development. Currently, a South Sacramento Habitat Conservation Plan (SSHCP) is being developed. So therefore, while development activities in south Sacramento County may negatively affect the snake, beetle, and vernal pool crustaceans and their habitats, the SSHCP will eventually ensure that development activities would avoid, minimize, and compensate for take of listed species to the greatest extent possible.

Giant Garter Snake

Additionally, an undetermined number of future land use conversions and routine agricultural practices are not subject to Federal permitting processes and may alter the habitat or increase incidental take of snakes, and are, therefore, cumulative to the proposed project. These additional cumulative effects include: (1) unpredictable fluctuations in aquatic habitat due to water management; (2) dredging and clearing of vegetation from irrigation canals; (3) discing or mowing upland habitat; (4) increased vehicular traffic on access roads adjacent to aquatic habitat; (5) use of burrow fumigants on levees and other potential upland refugia; (6) human intrusion into habitat; (7) diversion of water; (8) rip-rapping or lining of canals and stream banks; and (9) use of plastic erosion control netting (Stuart *et al.* 2001). Specific cumulative effects related to the proposed project include maintenance activities and/or an increased potential for vandalism during construction, which may degrade or destroy habitat or cause unpredictable fluctuations in habitat. Furthermore, the valley floor wetlands, which are the preferred habitat of the snake, are subject to the cumulative effects of upstream watershed modifications, water storage and diversion projects, as well as urban and agricultural development. The majority of all natural habitats have been lost and an unquantifiably small percentage of semi-natural

wetlands remain extant. Only a small percentage of extant wetlands currently provides habitat suitable for the snake.

Valley Elderberry Longhorn Beetle

Continued human population growth in the Central Valley, in general, and the Sacramento area, in particular, is expected to drive further development of agriculture, cities, industry, transportation, and water resources in the foreseeable future. Some of these future activities will not be subject to Federal jurisdiction, and thus are considered to enter into cumulative effects. These future activities are likely to result in loss of riparian and other habitats where elderberry shrubs and the beetle occur.

Many of the activities affecting the beetle may affect elderberry shrubs located within riparian ecosystems adjoining or within jurisdictional wetlands. These projects will be evaluated via formal consultation between the Service and the Corps via the Federal nexus provided by section 404 of the Clean Water Act. There are, however, a number of projects for which there is no need to discharge dredged or fill materials into waters of the U.S. These projects, for which no section 404 permit is required, may lack a Federal nexus and, thus, move forward with no formal consultation. These projects pose a significant threat to the recovery of the beetle, particularly when they result in the removal of elderberry savanna ecosystems. These foothill/upland landscapes often consist of mixed stands of elderberry shrubs and oak (*Quercus* spp.) trees which are interspersed with open grasslands in a savanna-like arrangement.

Elderberry shrubs in these savanna systems often achieve great size, perhaps due to the lack of light competition from broadleaf trees and/or entanglement with California grape (*Vitus californicus*) and/or Himalayan blackberry (*Rubus discolor* syn. *procerus*) vines, as often occurs in riparian communities. Elderberry savanna communities are important in that they represent a large portion of the diverse habitat in which elderberry shrubs occur and because urban sprawl threatens a significant acreage of these systems. This loss of habitat negatively affects the environmental baseline and is difficult to quantify.

Vernal Pool Crustaceans

Because the vernal pool tadpole shrimp and vernal pool fairy shrimp are endemic to vernal pools in the Central Valley, coastal ranges, and a limited number of sites in the transverse range and Santa Rosa plateau of California, the Service anticipates that a wide range of activities will affect these species. Such activities include, but are not limited to: (1) urban development, (2) water projects, (3) flood control projects, (4) highway projects, (5) utility projects, (6) chemical contaminants, and (7) conversion of vernal pools to agricultural use. Many of these activities will be reviewed under section 7 of the Act as a result of the Federal nexus provided by section 404 of the Federal Water Pollution Control Act, as amended (Clean Water Act).

The proposed project is located is a region where future destruction of vernal pool crustacean habitat is anticipated. Sacramento County will continue to develop within the county's sphere of influence. This development will result in increased direct loss of vernal pool habitat.

Development in the vicinity of the proposed project is expected to result in further destruction of habitat for the listed vernal pool crustaceans. Continued loss of vernal pool habitat throughout the region could conceivably affect the genetic diversity of the local population(s) of listed vernal pool crustaceans. Any loss of genetic diversity can have significant effects on a population's ability to respond to environmental change over time (Frankel and Soulé 1981).

Conclusion

After reviewing the current status of the giant garter snake, the valley elderberry longhorn beetle, the vernal pool tadpole shrimp, and the vernal pool fairy shrimp, the environmental baselines for the action area covered by this biological opinion, the effects of the proposed project, and the cumulative effects, it is the Service's biological opinion that proposed Interstate 5-Cosumnes River Boulevard Interchange project, as proposed, is not likely to jeopardize the continued existence of these four species. Because no critical habitat has been proposed or designated for the snake, none will be affected. The proposed project is not likely to destroy or adversely modify designated critical habitat for the beetle because no critical habitat for this species has been designated or proposed in the proposed action area. The proposed project is not likely to destroy or adversely modify designated critical habitat for the vernal pool fairy shrimp and the vernal pool tadpole shrimp because no critical habitat for these species has been designated in the proposed action area.

INCIDENTAL TAKE STATEMENT

Section 9(a)(1) of the Act and Federal regulation pursuant to section 4(d) of the Act prohibit the take of endangered and threatened fish and wildlife species without special exemption. Take is defined as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct. Harass is defined by the Service as an intentional or negligent act or omission which creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. Harm is defined by the Service to include significant habitat modification or degradation that results in death or injury to listed species by impairing behavioral patterns including breeding, feeding, or sheltering. Incidental take is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the Act provided that such taking is in compliance with this Incidental Take Statement.

The measures described below are non-discretionary, and must be implemented by the FHWA so that they become binding conditions of any grant or permit issued to the applicant, as appropriate, in order for the exemption in section 7(o)(2) to apply. The FHWA has a continuing duty to regulate the activity covered by this incidental take statement. If the FHWA (1) fails to require any entity participating in the project to adhere to the terms and conditions of the incidental take statement through enforceable terms that are added to the permit or grant

document, and/or (2) fails to retain oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(o)(2) may lapse.

Amount or Extent of Take

Giant Garter Snake

The Service anticipates incidental take of the snake will be difficult to detect or quantify for the following reasons: snakes are cryptically colored, secretive, and known to be sensitive to human activities. Snakes may avoid detection by retreating to burrows, soil crevices, vegetation, and other cover. Individual snakes are difficult to detect unless they are observed, undisturbed, at a distance. Most close-range observations represent chance encounters that are difficult to predict. It is not possible to make an accurate estimate of the number of snakes that would be harassed, harmed, or killed during construction activities, including in staging areas, canal banks, soil borrow areas, and roads carrying vehicular traffic to and from borrow areas. In instances when take is difficult to detect, the Service may estimate take in numbers of species per acre of habitat lost or degraded as a result of the action. Therefore, the Service anticipates that all snakes inhabiting the 0.138 acre of aquatic habitat and 3.185 acres of upland habitat on the proposed project site may be harassed or harmed by loss and destruction of habitat as a result of the project.

Valley Elderberry Longhorn Beetle

The Service anticipates incidental take of the beetle will be difficult to detect or quantify. The cryptic nature of these species and their relatively small body size make the finding of an injured or dead specimen unlikely. The species occurs in habitats that make them difficult to detect. Due to the difficulty in quantifying the number of valley elderberry longhorn beetles that will be taken as a result of the proposed project, the Service is quantifying take incidental to the project as all valley elderberry longhorn beetles inhabiting or otherwise utilizing the elderberry shrubs/savannas containing stems 1.0 inch or greater in diameter at ground level located within 20 feet of the centerline of the proposed alignment on the project site. Therefore, the proposed project may incidentally take all beetles inhabiting 26 elderberry shrubs, totaling 46 stems measuring between one and three inches in diameter, seven stems measuring between three and five inches in diameter, and 17 stems measuring greater than five inches in diameter on the proposed project site. Therefore, the Service estimates that all beetles and larvae inhabiting the 70 elderberry stems which are greater than 1.0 inch in diameter at ground level will become harassed, harmed, injured, or killed as a result of the proposed project.

Vernal Pool Crustaceans

Construction activities associated with the proposed project will indirectly affect a 0.5-acre seasonal wetland and result in take of the vernal pool tadpole shrimp and the vernal pool fairy shrimp. The Service anticipates incidental take of these two listed vernal pool crustaceans will be difficult to detect or quantify for the following reasons: the aquatic nature of the organisms and their relatively small body size make the finding of a dead specimen unlikely; losses may be

masked by seasonal fluctuations in numbers and other causes; and the species occurs in habitat that makes them difficult to detect. Due to the difficulty in quantifying the number of vernal pool fairy shrimp and vernal pool tadpole shrimp that will be killed as a result of the proposed action, the Service is quantifying take incidental to the project as the number of acres of vernal pool crustacean habitat that will become unsuitable for the listed species due to indirect affects as a result of the proposed project. Therefore, the Service estimates that all vernal pool fairy shrimp and vernal pool tadpole shrimp inhabiting 0.5 acre of vernal pool crustacean habitat will become harassed, harmed, injured, or killed as a result of the proposed project.

Upon implementation of the following reasonable and prudent measures, incidental take associated with the proposed project on the beetle and the two vernal pool crustaceans in the form of harm, harassment, or death from habitat loss, injury, or direct mortality, and incidental take associated with the proposed project on the snake in the form of harm or harassment from habitat loss, will become exempt from the prohibitions described under section 9 of the Act for direct and indirect effects. The incidental take associated with the proposed project is hereby exempted from prohibitions of take under section 9 of the Act.

Effect of the Take

In the accompanying biological opinion, the Service has determined that this level of anticipated take is not likely to result in jeopardy to the snake, beetle, and/or vernal pool crustaceans. No critical habitat has been designated for the snake; therefore, none will be affected. The proposed project is not likely to destroy or adversely modify designated critical habitat for the beetle because no critical habitat for this species has been designated in the proposed action area. The proposed project is not likely to destroy or adversely modify designated critical habitat for the vernal pool fairy shrimp and the vernal pool tadpole shrimp because no critical habitat for these species has been designated in the proposed project area.

Reasonable and Prudent Measures

The Service believes the following reasonable and prudent measures are necessary and appropriate to minimize the effect of take on the snake:

1. Take in the form of harassment and/or harm of the snake, beetle, and vernal pool crustaceans during construction activities and associated with implementing the project shall be minimized.

2. The permanent and temporary loss and degradation of habitats of the snake, beetle, and vernal pool crustaceans shall be confined to the proposed project site, and minimized and restored to the greatest extent practicable.

Terms and Conditions

In order to be exempt from the prohibitions of section 9 of the Act, the FHWA must ensure compliance with the following terms and conditions, which implement the reasonable and prudent measures described above. These terms and conditions are nondiscretionary.

1. The following terms and conditions implement reasonable and prudent measure number one (1):

    a. The project proponents shall minimize the potential for harm, harassment, and direct mortality of the snake, beetle, and vernal pool crustaceans resulting from project-related activities by implementation of the project, including the conservation measures as described on pages 8-15 of the Biological Assessment (Jones & Stokes 2003), in the July 12, 2004, letter from Caltrans to the Service, in the October 8 and December 2, 2004, emails between the Service and Caltrans, and appearing in the project description (pages 2-9) of this biological opinion.

    b. The applicants shall include a copy of this biological opinion within its solicitations for design and construction of the proposed project making the primary contractor responsible for implementing all requirements and obligations included within the biological opinion, and to educate and inform all other contractors involved in the project as to the requirements of the biological opinion. A copy of the solicitations containing the biological opinion also will be provided to the Chief of Endangered Species (Central Valley) at the Sacramento Fish and Wildlife Office.

    c. At least 30 days prior to initiating construction activities, the project proponents shall submit the names and curriculum vitae of the biological monitor(s) for the proposed project.

    d. A Worker Environmental Awareness Training Program for construction personnel shall be conducted by the Service-approved biologist for all construction workers, including contractors, prior to the commencement of construction activities. The program shall provide workers with information on their responsibilities with regard to the snake, beetle, and vernal pool crustaceans, an overview of the life-history of these species, information on take prohibitions, protections afforded this animal under the Act, and an explanation of the relevant terms and conditions of this biological opinion. Written documentation of the training must be submitted to the Sacramento Fish and Wildlife Office within 30 days of the completion of training. As needed, training shall be conducted in Spanish for Spanish language speakers.

    e. Construction activity within giant garter snake habitat (*e.g.* aquatic, upland, and rice habitat) shall be conducted between May 1 and October 1. This is the active period for the snake and direct mortality is lessened, because snakes are expected

to actively move and avoid danger. If it appears that construction activity may go beyond October 1, the project proponents shall contact the Service as soon as possible, but not later than September 15 of the year in question, to determine if additional measures are necessary to minimize take. Construction activities within 200 feet from the banks of snake aquatic habitat will be avoided during the snake's inactive season.

f. Project construction within 100 feet of elderberry shrubs shall be prohibited during the beetle emergence and mating period (*e.g.*, March 15 through June 15) to eliminate any indirect effects of construction on the beetle or its eggs. Note the Service's incorporation of a Term and Condition limiting the time during which the shrub may be transplanted.

g. Aquatic habitat for the snake will be dewatered 15 days prior to the initiation of construction activities. If complete dewatering is not possible, potential snake prey (*i.e.*, fish and tadpoles) will be removed so that snakes and other wildlife are not attracted to the construction area.

h. At most 24-hours prior to the commencement of construction activities, the project site shall be surveyed for giant garter snakes by a Service-approved biologist. The biologist will provide the Service with a written report that adequately documents the monitoring efforts within 24-hours of commencement of construction activities. The project area shall be re-inspected by the monitoring biologist whenever a lapse in construction activity of two weeks or greater has occurred.

i. A Service-approved biologist shall inspect construction-related activities at the proposed project site to ensure that no unauthorized take of federally-listed species or destruction of their habitat occurs. The biologist shall be available for monitoring throughout all phases of construction that may result in adverse affects to the giant garter snake, valley elderberry longhorn beetle, and vernal pool crustaceans. Furthermore, the biologist shall have the authority through communication with the resident engineer to stop construction activities in the immediate area if a giant garter snake is encountered during construction until appropriate corrective measures have been completed or until the snake is determined to be unharmed. Snakes encountered during construction activities shall be allowed to move away from the area on their own volition. The biologist shall notify the Service immediately if any listed species are found on-site, and will submit a report, including date(s), location(s), habitat description, and any corrective measures taken to protect the species found. The biologist shall be require to report any take of listed species to the Service immediately by telephone at 916/ 414-6600 and by electronic mail or written letter addressed to the Chief, Endangered Species Division, within three (3) working days of the incident.

j. Measures consistent with the current Caltrans' Construction Site Best Management Practices (BMPs) Manual, including the Storm Water Pollution Prevention Plan (SWPPP) and Water Pollution Control Program (WPCP) Manuals, will be implemented to minimize effects to the snake during construction. Best management practices will be implemented to prevent sedimentation from entering ESAs and to reduce erosion, dust, noise, and other deleterious aspects of construction related activities. These BMPs may include, but are not limited to, silt fencing, temporary berms, restrictions on cleaning equipment in or near ESAs, installation of vegetative strips, and temporary sediment disposal. Runoff from dust control and hazardous materials will be retained on the construction site and prevented from flowing into the ESAs.

k. Tightly woven fiber netting or similar material shall be used for erosion control and other purposes at the project site to ensure that the giant garter snake does not get trapped or become entangled. This limitation shall be communicated to the contractor through the use of special provisions included in the bid solicitation package.

l. During construction operations, the number of access routes, number and size of staging areas, and the total area of the proposed project activity will be limited to the minimum necessary. Routes and boundaries will be clearly demarcated. Movement of heavy equipment to and from the project site will be restricted to established roadways to minimize habitat disturbance. Project-related vehicles shall observe a 20-mile-per-hour speed limit within construction areas, except on County roads and on State and Federal highways. This is particularly important during periods when the snake may be sunning or moving on roadways. All heavy equipment, vehicles, and supplies will be stored at the designated staging area at the end of each work period.

m. During construction operations, stockpiling of construction materials, portable equipment, vehicles, and supplies will be restricted to the designated construction staging areas and exclusive of the ESAs. The applicant will ensure contamination of habitat does not occur during such operations. All workers will be informed of the importance of preventing spills and appropriate measures to take should a spill occur.

n. To eliminate an attraction to predators of the snake, all food-related trash items, such as wrappers, cans, bottles, and food scraps, must be disposed of in closed containers and removed at the end of each work day from the entire project site.

o. No application of herbicides, insecticides, and/or other chemical agents shall occur within 100-feet of the elderberry plants or where they might drift or wash into the area of the elderberry plants.

p. The applicant shall ensure that activities that are inconsistent with the maintenance of the suitability of vernal pool crustacean habitat and the associated on-site watershed are prohibited. These include, but are not limited to (1) the alteration of existing topography that may alter hydrology into habitat for Federally-listed vernal pool crustaceans; (2) the placement of any new structures within suitable habitat; (3) dumping, burning, and/or burying of rubbish, garbage, or any other wastes and fill materials; (4) the placement of stormwater drains; (5) fire protection activities not required to protect existing structures at the proposed project site; and (6) use of pesticides or other toxic chemicals.

q. The project proponent shall require documentation from the contractor that aggregate, fill, or borrow material provided for the proposed project was obtained in compliance with the Act. Evidence of compliance with the Act shall be demonstrated by providing the resident engineer with one of the following: 1) a letter from the Service stating that the use of the borrow pit will not result in the incidental take of species; 2) an incidental take permit for contractor-related activities issued by the Service pursuant to section 10(a)(1)(B) of the Act; 3) a biological opinion or letter concurring with a "not likely to adversely affect" determination issued by the Service to the Federal agency having jurisdiction over contractor-related services' 4) a letter from the Service concurring with the "no effect" determination for contractor-related activities; or 5) contractor submittal of information to the Caltrans resident engineer indicating compliance with the State Mining and Reclamation Act (SMARA) and provision of County land use permits and California Environmental Quality Act (CEQA) clearance.

2. The following terms and conditions implement reasonable and prudent measure number two (2):

a. The project proponents shall minimize the potential for loss, modification, or degradation of habitat of the snake, beetle, and vernal pool crustaceans resulting from project-related activities by implementation of the project, including the conservation measures as described on pages 8-15 of the Biological Assessment (Jones & Stokes 2003), in the July 12, 2004, letter from Caltrans to the Service, in the October 8 and December 2, 2004, emails between the Service and Caltrans, and appearing in the project description (pages 2-9) of this biological opinion.

b. Prior to the initiation of construction activities, the project proponent shall transplant the 26 elderberry shrubs, which are located within 20 feet of the centerline of the proposed alignment of the project and cannot be avoided, to a Service-approved conservation area. Transplanting must occur while the elderberry plants are dormant, between November and the first two weeks of February, after they have lost their leaves. The Service shall be consulted prior to transplantation and a Service-approved biologist will monitor the transplanting activities. These shrubs will be transplanted according to the Service's

July 9, 1999 *Conservation Guidelines for the Valley Elderberry Longhorn Beetle* (Service 1999a).

c. The project proponents shall ensure that the temporary loss of giant garter snake, valley elderberry longhorn beetle, and vernal pool crustacean habitat is confined to the proposed project site.

d. Prior to the commencement of construction activities, high visibility fencing will be erected around the habitats of these federally-listed species to identify and protect these designated Environmentally Sensitive Areas (ESAs) from encroachment of personnel and equipment. These areas will be avoided by all construction personnel. The fencing shall be inspected before the start of each work day and maintained by the project proponents until completion of the project. The fencing may be removed only when the construction of the project is completed.

   i. Fencing will be established at least 200 feet from the edge of aquatic snake habitat.

   ii. Fencing will be established at a minimum setback of 20 feet from the dripline of each of the seven elderberry shrubs that are between 20 and 100 feet of the proposed project alignment. These seven shrubs will not be removed or transplanted. There will be no physical alterations of any type within the area enclosed by the fencing.

   iii. Fencing will be established at a minimum distance of 50 feet from the edge of "seasonal wetland 1", suitable vernal pool crustacean habitat.

e. Signs will be posted every 50 feet along the edge of the ESAs, with the following information: "This area is habitat of federally-threatened and/or endangered species, and must not be disturbed. These species are protected by the Endangered Species Act of 1973, as amended. Violators are subject to prosecution, fines, and imprisonment." The signs should be clearly readable from a distance of 20 feet, and must be maintained for the duration of construction.

f. A post-construction walkthrough will be conducted to assess whether any damage occurred to vegetation within the buffer areas. Damage may include accidental cutting of vegetation or visible physical damage to roots, stems, and leaves. If damage is observed, vegetation within the buffer areas will be restored with appropriate native plant species. Erosion control measures and exotic weed abatement measures shall be implemented. If unanticipated damage is done to elderberry shrubs, the Service will be notified and appropriate compensation will be implemented.

g. After construction activities are complete, any temporary fill or construction debris shall be removed and disturbed areas restored to their pre-project conditions. An area subject to "temporary" disturbance includes any area that is disturbed during the project, but that, after project completion, will not be subject to further disturbance and has the potential to be re-vegetated.

   i. As described in the biological assessment and the project description of this biological opinion, the project proponents will restore all snake habitats subject to temporary ground disturbances, including storage and staging areas and temporary roads. This includes 3.108 acres of snake upland habitat and 0.136 acre of snake aquatic habitat. These areas shall be re-contoured, if appropriate, and re-vegetated with appropriate locally-collected native plant species to promote restoration of the area to pre-project conditions. Appropriate methods and plant species used to re-vegetate such areas will be determined on a site-specific basis in consultation with the Service and the CDFG. Restoration work may include replanting emergent vegetation Refer to the Service's *Guidelines for the Restoration and/or Replacement of Giant Garter Snake Habitat* (Service 1997). A written report shall be submitted to the Service within ten (10) working days of the completion of construction at the project site.

h. The project proponents will maintain and monitor the project site for one (1) year following the completion of construction and restoration activities. Monitoring reports documenting the restoration effort should be submitted to the Service upon the completion of the restoration implementation and one (1) year after the restoration implementation. Monitoring reports should include photo-documentation, when restoration was completed, what materials were used, specified plantings, and justifications of any substitutions to the Service-recommended guidelines.

i. The FHWA shall ensure compliance with the reporting requirements.

j. As described on pages 8-15 of the Biological Assessment (Jones & Stokes 2003), in the July 12, 2004, letter from Caltrans to the Service, and appearing in the project description (pages 2-9) of this biological opinion, prior to the commencement of construction activities the project proponent shall compensate for the temporary and permanent loss habitat of the snake, beetle, and vernal pool crustaceans, as follows:

   i. Prior to the initiation of construction activities, the project proponent will purchase the equivalent of 3.481 acres of giant garter snake habitat credits from a Service-approved snake conservation area servicing the area where the proposed project effects occur. This purchase shall compensate for 1.88 acres of temporarily affected giant garter snake habitat and 0.237 acre of permanently affected giant garter snake habitat. All temporary effects

will be compensated at a 1:1 ratio, and all permanent effects will be compensated at a 3:1 ratio.

ii. Prior to ground breaking activities at the project site, the project proponents will purchase the equivalent of 26.0 beetle habitat credits at a Service-approved conservation bank. At least 111 rooted elderberry seedlings and 111 associated native plant species will be planted. The minimum area required is 1.02 acres (44,640 square feet) to ensure that no more than five elderberry seedlings/transplants and five associated native plants are planted per 1,800 square feet.

The conservation area shall be managed and monitored in perpetuity as outlined in the Beetle Conservation Guidelines (Service 1999a). This includes the management and monitoring of the conservation area for either ten (10) consecutive years or seven (7) years over a 15-year period, with monitoring reports submitted for each monitoring year. The project proponent must identify an adequate funding source (*i.e.*, endowment) to ensure the protection and management of the conservation area in perpetuity. Additionally, a management plan must be prepared which describes the long-term protection of this conservation area in order to protect the area in perpetuity as habitat for the valley elderberry longhorn beetle.

iii. Prior to the initiation of construction activities, the project proponent shall compensate for indirect effects to the habitat of listed vernal pool crustacean by purchasing the equivalent of 1.0 acre of vernal pool habitat preservation credits within a Service-approved preservation bank.

Reporting Requirements

Any contractor or employee who, during routine operations and maintenance activities, inadvertently kills or injures a listed wildlife species must immediately report the incident to their representative. The Service is to be notified within one (1) working day of the finding of any dead or injured listed wildlife species or any unanticipated take of the species addressed in this biological opinion. Injured giant garter snakes shall be treated and cared for by a licensed veterinarian or other qualified person. The Service contact persons for this are the Division Chief, Endangered Species Division (Central Valley) at (916) 414-6600 and Resident Agent-in-charge Scott Heard at (916) 414-6660. Any killed snakes that have been taken shall be properly preserved in accordance with the Natural History Museum of Los Angeles County policy of accessioning (*i.e.*, 10 percent formalin in a quart jar or freezing). Preserved specimens shall be delivered to the Service's Law Enforcement Office at 2800 Cottage Way, W-2605, Sacramento, California, 95825-1846, phone (916) 414-6660.

The Service-approved biologist shall notify the Service within one (1) working day if any listed species are found on site, and shall submit a report including the date(s), location(s), habitat

description, and any corrective measures taken to protect the species found. The Service-approved biologist shall submit locality information to the CDFG, using completed California Native Species Field Survey Forms, no more than 30 calendar days after completing the last field visit of the project site. Each form shall have an accompanying scale map of the site, such as a photocopy of a portion of the appropriate 7.5-minute U.S. Geological Survey map and shall provide at least the following information: township, range, and quarter section; name of the 7.5-minute or 15-minute quadrangle; dates (day, month, year) of field work; number of individuals and life stage, where appropriate, encountered; and a description of the habitat by community-vegetation type. The Service-approved biologist shall also provide a high quality copy of this information to the staff zoologist, California Department of Fish and Game, 1807 13th Street, Sacramento, California, 95814, phone (916) 445-0045.

The Sacramento Fish and Wildlife Office is to be notified within one (1) working day of the finding of any dead or injured listed wildlife species or any unanticipated take of the species addressed in this biological opinion. Any other federally listed or candidate species found on or adjacent to the project area must be reported within three working days of its finding. The Service contact person for this is the Chief, Endangered Species Division at (916) 414-6620. Any dead or severely injured valley elderberry longhorn beetles found (adult, pupae, or larvae) shall be deposited in the Entomology Department of the California Academy of Sciences. The Academy's contact in the Senior Curator of Coleoptera at (415) 750-7239. All observations of valley elderberry longhorn beetle—live, injured, or dead—or fresh beetle exit holes shall be recorded on California Natural Diversity Data Base (CNDDB) field sheets and sent to California Department of Fish and Game, Wildlife Habitat Data Analysis Branch, 1416 Ninth Street, Sacramento, California 95814.

The project proponents shall submit a post-construction compliance report prepared by the monitoring biologists to the Sacramento Fish and Wildlife Office within thirty (30) calendar days of the completion of construction activity. This report shall detail the following: (1) dates that construction occurred; (2) pertinent information concerning the success of the project in meeting conservation measures; (3) an explanation of failure to meet such measures, if any and recommendations for remedial actions and request for approval from the Service, if necessary; (4) known project effects on the snake, beetle, and vernal pool crustaceans, if any; (5) occurrence of incidental take of snakes, beetles, and/or vernal pool crustaceans, if any; and (6) other pertinent information.

CONSERVATION RECOMMENDATIONS

Section 7(a)(1) of the Act directs Federal agencies to utilize their authorities to further the purposes of the Act by carrying out conservation programs for the benefit of endangered and threatened species. Conservation recommendations are discretionary agency activities that can be implemented to further the purposes of the Act, such as preservation of endangered species habitat, implementation of recovery actions, or development of information and data bases.

1. The FHWA should work with the Service to address significant, unavoidable environmental effects resulting from projects proposed by non-Federal parties.

2. The FHWA should assist the Service in implementing the draft, and, when completed, the final recovery plan for the snake.

3. THE FHWA should assist the Service in the implementation of recovery efforts for the beetle.

4. As recovery plans for listed vernal pool crustacean species are developed, FHWA should assist the Service in their implementation.

5. The FHWA, in partnership with the Service, should develop maintenance guidelines for FHWA projects that will reduce adverse effects of routine maintenance on the snake, beetle, and vernal pool crustaceans and their habitats. Such action may contribute to the delisting and recovery of these species by preventing degradation of existing habitat and increasing the amount and stability of suitable habitat.

In order for the Service to be kept informed of actions minimizing or avoiding effects or benefiting listed species or their habitats, the Service requests notification of the implementation of any conservation recommendations.

REINITIATION--CLOSING STATEMENT

This concludes formal consultation with the FHWA on the proposed Interstate 5-Cosumnes River Boulevard Interchange project. As provided in 50 CFR §402.16, re-initiation of formal consultation is required where discretionary Federal agency involvement or control over the action has been maintained (or is authorized by law) and if: (1) the amount or extent of incidental take is exceeded; (2) new information reveals effects of the agency action that may affect listed species or critical habitat in a manner or to an extent not considered in this opinion; (3) the agency action is subsequently modified in a manner that causes an effect to the listed species or critical habitat that was not considered in this opinion; or (4) a new species is listed or critical habitat designated that may be affected by the action. In instances where the amount or extent of incidental take is exceeded, any operations causing such take must cease pending re-initiation.

Please contact Kelly Fitzgerald or the Acting Sacramento Valley Branch Chief of this office at (916) 414-6645, if you have any questions regarding the Interstate 5-Cosumnes River Boulevard Interchange project.

Sincerely,

for Kenneth Sanchez
Acting Field Supervisor

cc:
ARD (ES), Portland, OR
Mr. Leland Dong, FHWA, Sacramento, CA
Mr. Larry Vizant, FHWA, Sacramento, CA
Mr. Kent Smith, CDFG, Rancho Cordova, CA
Ms. Dee Warenycia, CDFG, Sacramento, CA
Mr. Chris Collison, Caltrans, Sacramento, CA
Ms. Amy Kennedy, Caltrans, Sacramento, CA
Ms. Grace Hovey, City of Sacramento, Sacramento, CA
Mr. Saed Hasan, City of Sacramento, Sacramento, CA
Ms. Victoria Axiaq, Jones & Stokes, Sacramento, CA
Mr. Will Kohn, Jones & Stokes, Sacramento, CA

LITERATURE CITED

Ahl, J. S. B. 1991. Factors affecting contributions of the tadpole shrimp, *Lepidurus packardi*, to its oversummering egg reserves. Hydrobiologia 212: 137-143.

Barr, C.B. 1991. The Distribution, Habitat, and Status of the Valley Elderberry Longhorn Beetle, *Desmocerus californicus dimorphus* Fisher (Insecta: Coleoptera: Cerambycidae). U.S. Fish and Wildlife Service: Sacramento, California. 134 pages.

Bauder, E. T. 1986. San Diego vernal pools: recent and projected losses, their condition, and threats to their existence. California Department of Fish and Game, Sacramento, California.

_____ 1987. Threats to San Diego vernal pools and a case study in altered pool hydrology. Pages 209-214 *in* T. S. Elias (ed.). Conservation and Management of Rare and Endangered Plants. California Native Plant Society, Sacramento, California.

Bolger, D.T., A.C. Alberts, and M.E. Soulé. 1991. Occurrence patterns of bird species in habitat fragments: sampling, extinction, and nested species subsets. American Naturalist 137: 155-156.

Brode, J. 1988. Natural history of the giant garter snake (*Thamnophis couchii gigas*). Pages 25-28 *in* H.F. DeListe, P.R. Brown, B. Kaufman, and B.M. McGurty (eds.), Proceedings of the conference on California herpetology. Special Publication Number 4, Southwestern Herpetologists Society.

Brode, J. and G. Hansen. 1992. Status and future management of the giant garter snake (*Thamnophis gigas*) within the southern American Basin, Sacramento and Sutter Counties, California. California Department of Fish and Game, Inland Fisheries Division. January 1992.

California, Department of Finance. 2000. City/County Population and Housing Estimates, 1991-2000, with 1990 Census Counts. May. Sacramento, California.

_____ 2001. Interim County Population Projections, Estimated July 1, 2000, and Projections for 2005, 2010, 2015, and 2020. June. Demographic Research Unit. Sacramento, California.

_____ 2002. Revised Historical City, County, and State Populations Estimates, 1991-2000, with 1990 and 2000 Census Counts. March. Sacramento, California.

_____ 2003a. County Population Estimates and Components of Change, July 2001-2002, with Historical 2000 and 2001 Estimates. January. Sacramento, California.

_____ 2003b. E-1, City/County Population Estimates, with Annual Percent Change, January 1, 2002, and 2003. May. Sacramento, California.

_____ 2003c. E-5, City/County Population and Housing Estimates, 2003, Revised 2002, and Revised 2001, with 2000 DRU Benchmark. May. Sacramento, California.

California Natural Diversity Database (CNDDB). 2004. Natural Heritage Division, California Department of Fish and Game. Sacramento, California.

California, Office of Planning and Research. 2003d. Governor's Environmental Goals and Policy Report. November. State of California Governor's Office of Planning and Research. Sacramento, California.

Coe, T. 1988. The application of Section 404 of the Clean Water Act to Vernal Pools. Pages 356-358 *In*: J. A. Kusler , S. Daly, and G. Brooks (eds.). Urban Wetlands. Proceedings of the National Wetland Symposium, Oakland, California.

Collinge, S.K. 1996. Ecological Consequences of Habitat Fragmentation: Implications for landscape architecture and planning. *Landscape and Urban Planning* 36:59-77.

Collinge, S.K., M. Holyoak, J.T. Marty, and J.B. Barr. 2001. Riparian Habitat Fragmentation and Population Persistence of the Threatened Valley Elderberry Longhorn Beetle in Central California. *Biological Conservation* 100:103-113.

Conrad, S.G., R.L. MacDonald, and R.F. Holland. 1977. Riparian Vegetation and Flora of the Sacramento Valley. Pages 47-56 *in* A. Sands (Ed.), Riparian Forests in California: Their ecology and conservation. University of California: Davis, California. May 14.

Daborn, G. 1978. Distribution and biology of some nearctic tundra pool phyllopods. Verb. Internat. Verein. Limnol. 20: 2442-2451.

Department of Water Resources (DWR). 1979. Land Use Changes in the Sacramento River Riparian Zone, Redding to Colusa, 1972-1977. Northern District Report, Sacramento, California. June 1979.

Donald, D. B. 1983. Erratic occurrence of anostracans in a temporary pond: colonization and extinction or adaptation to variations in annual weather? Can. J. Zool. 61:1492-1498.

Driver, E. A. 1981. Calorific values of pond invertebrates eaten by ducks. Freshwater Biology 11: 579-581.

Eng, L. L., D. Belk and C. H. Eriksen. 1990. Californian Anostraca: distribution, habitat, and status. Journal of Crustacean Biology 10: 247-277.

Eriksen, C. H. and D. Belk. 1999. Fairy shrimps of California's puddles, pools, and playas. Mad River Press, Eureka, California. 196 pages.

Fitch, H.S. 1941. Geographic Variation in Garter Snakes of the Genus *Thamnophis sirtalis* in the Pacific Coast Region of North America. American Midland Naturalist 26:570-592.

Frankel, O. H., and M. E. Soulé, 1981. Conservation and evolution. Cambridge University Press, Cambridge, UK.

Frayer, W. E., D. D. Peters, and H. R. Pywell. 1989. Wetlands of the California Central Valley: status and trends, 1939 to mid-1980's. U.S. Fish and Wildlife Service, Region 1. Portland, Oregon.

Fryer, G. 1987. A new classification of the branchiopod crustacea. Zoological Journal of the Linnean Society 91(4): 357-383.

Fugate, M. L. 1992. Speciation in the fairy shrimp genus Branchinecta (Crustacea: Anostraca) from North America. Ph D Thesis in Biology, University of California, Riverside, California. 188 pages.

Gallagher, S. P. 1996. Seasonal occurrence and habitat characteristics of some vernal pool branchiopoda in Northern California, U.S.A. Journal of Crustacean Biology 16: 323-329.

Gilliom, Robert, J. 1999. Pesticides in the nation's water resources. U.S. Geological Survey. Water environment federation briefing series presentation. Capitol Building, Washington D.C. March 19, 1999.

Gilpin, M. E. and M. E. Soulé. 1988. Minimum viable populations: processes of species extinction." *In* M. E. Soulé (ed.), Conservation Biology: The Science of Scarcity and Diversity. Sinauer Associates, Inc.; Sunderland, MA. Pages 18-34.

Goodman, D. 1987a. The demography of chance extinction. Pages 11-19 *In*: M. E. Soulé (ed.). Conservation Biology: the science of scarcity and diversity. Sinauer Associates, Inc., Sunderland, Massachusetts.

_____ 1987b. How do any species persist? Lessons for conservation biology. Conservation Biology 1:59-62.

Halstead, J.A. and J.A. Oldham. 2000. New distribution records for the elderberry longhorn beetle (*Desmocerus californicus*) (Horn) (Coleoptera: Cerambycidae). Pan-Pacific Entomologist 76(1): 74-76.

Hansen, E.C. 2003. Baseline Surveys for Giant Garter Snakes (*Thamnophis gigas)* at the Prichard Lake Restoration Project Site: Sacramento County, California. Prepared for Sacramento County Airport System.

_____. 2004. Year 2003 Investigations of the Giant Garter Snake (*Thamnophis gigas)* in the Middle American Basin: Sutter County, California. Prepared for Sacramento Area Flood Control Agency.

Hansen, G.E. 1982. Status of the giant garter snake (*Thamnophis couchii gigas*) along portions of Laguna and Elk Grove Creeks, Sacramento County, California. Report to Sacramento County Planning Department.

_____ 1986. Status of the giant garter snake (*Thamnophis couchii gigas*) (Fitch) in the southern San Joaquin Valley during 1986. Final report for California Department of Fish and Game, Standard Agreement Number C-1433. Unpublished.

_____ 1996. Status of the giant garter snake (*Thamnophis gigas*) in the San Joaquin Valley in 1995. Final report for California Department of Fish and Game, Standard Agreement Number FG4052IF. Unpublished.

Hansen, R. W. 1980. Western aquatic garter snakes in central California: an ecological and evolutionary perspective. Master of Arts thesis, California State University, Fresno, California, 78 pages.

____. 1988. Review of the status of the giant garter snake (*Thamnophis couchi gigas*) and its supporting habitat during 1986-1987. Final report for Calif. Depart. Fish and Game Contract C-2060. Unpublished Report. Rancho Cordova, California. 31 pages.

Hansen, G. E. and J. M. Brode. 1980. Status of the giant garter snake *Thamnophis couchi gigas* (Fitch). California Department of Fish and Game, Inland Fisheries Endangered Species Program Special Publication 80-5. Rancho Cordova, California. 14 pages.

_____ 1993. Results of relocating canal habitat of the giant garter snake (*Thamnophis gigas*) during widening of SR 99/70 in Sacramento and Sutter Counties, California. Final report for Caltrans Interagency Agreement 03E325 (FG7550) (FY 87/88-91-92). Unpublished Report. Rancho Cordova, California. 36 pages.

Hansen, R.W. and G.E. Hansen. 1990. *Thamnophis gigas* (giant garter snake) Reproduction. Herpetological Review 21(4):93-94.

Hathaway, S. A. and M. A. Simovich. 1996. Factors Affecting the Distribution and Co-Occurrence of Two Southern Californian Anostracans (Branchiopoda), *Branchinecta Sandiegonensis* and *Streptocephalus Woottoni*. Journal of Crustacean Biology 16(4): 669-677.

Helm, B. 1998. Biogeography of eight large branchiopods endemic to California. Pages 124 - 139 *in* Ecology, conservation, and management of vernal pool ecosystems - proceedings from a 1996 conference, C. W. Witham, E.T. Bauder, D. Belk, W.R. Ferren, Jr., and R. Ornduff, eds. California Native Plant Society, Sacramento, California. 285 pages.

Hinds, N.E.A. 1952. Evolution of the California Landscape. California Division of Mines Bulletin No. 158. 240 pages.

Holland, R. F. 1978. The geographic and edaphic distribution of vernal pools in the Great Central Valley, California. California Native Plant Society. Special Publ. 4:1-12.

Holway, D.A. 1995. Distribution of the Argentine ant (*Linepithema humile*) in northern California. Conservation Biology 9:1634-1637.

Huxel, G. R. 2000. The effect of the invasive Argentine ant on the threatened valley elderberry longhorn beetle. Biological Invasions 2:81-85

Huxel, G. R. and S. K. Collinge. In prep. Modeling population viability for the threatened valley elderberry longhorn beetle: effects of habitat loss, fragmentation, and restoration. Submitted to Ecological Applications.

Ingraham, M., G.P. Nabhan, S. Buchmann. 1996. Impending pollination crisis threatens biodiversity and agriculture. Tropinet 7:1.

Jones & Stokes Associates (Jones & Stokes). 1988. Final Report: Field investigations of life history characteristics of the valley elderberry longhorn beetle along the Consumnes River, Sacramento County, California. Prepared for the U.S. Fish and Wildlife Service. Prepared by Jones & Stokes Associates, Inc.: Sacramento, California. 6 pages + appendix.

_____. 2002. Biological Assessment for the Laguna Interceptor Extension Project. October. (Jones & Stokes 01-510). Sacramento, California. Prepared for U.S. Army Corps of Engineers, Sacramento, California.

_____. 2003. Biological Assessment for the Interstate 5-Cosumnes River Boulevard Project. November. Sacramento, California. Prepared for the U.S. Fish and Wildlife Service.

Katibah, E. F. 1984. A brief history of riparian forests in the Central Valley of California. Pages 23-29 *in* Warner, R. E. And K. M. Hendrix (eds.). California riparian systems: ecology, conservation, and productive management. University of California Press, Berkeley, California.

King, J. L. 1996. The evolution of diversity in ephemeral pools crustaceans: from genes to communities. Ph.D. Dissertation, Department of Zoology, University of California, Davis, California. 207 pages.

Krapu, G. L. 1974. Foods of breeding pintails in North Dakota. Journal of Wildlife Management. 38(3): 408-417.

Lanaway, C. S. 1974. Environmental factors affecting crustacean hatching in five temporary ponds. M.S. thesis. Department of Biological Science, California State University, Chico, California.

Lande, R. 1988. Genetics and demography in biological conservation. Science 241:1455-1460.

Linder, F. 1952. The morphology and taxonomy of the crustacean Nostraca, with special reference to the North American species. Proc. U.S. Nat. Mus. 102:1-57.

Longhurst, A. R. 1955. A review of the Nostraca. Bull. Brit. Mus. (Nat. Hist.) Zool. 3:1-57.

McCarten, N.F. and C.A. Patterson. 1987. Vegetation quality and rare plant study of riparian plant communities along the middle Sacramento River, California. Non-game Heritage Program, Sacramento, California.

McGill, Robert, R., Jr. 1975. Land use changes in the Sacramento River riparian zone, Redding to Colusa. April. California Department of Water Resources. Sacramento, California. 23 pages.

Mura, G. 1991. Life History and Interspecies Relationships of Chirocephalus-Diaphanus Prevost and Tanymastix-Stagnalis (L), (Crustacea, Anostraca) Inhabiting a Group of Mountain Ponds in Latium, Italy. Hydrobiologia 212(APR): 45-59.

Pennak, R. W. 1989. Freshwater invertebrates of the United States. Wiley & Sons, New York, New York.

Perdue, R.E. 1958. *Arundo donax* – source of musical reeds and industrial cellulose. Economic Botany 12(4):368-404.

Primack, R.B. 1998. Essentials of conservation biology. Second Edition. Sinaur Associates. Sunderland, Massachusetts.

Rieger, J.P. and D.A. Kreager. 1989. Giant reed (*Arundo donax*): a climax community of the riparian zone. In: Abell DL (Technical Coordinator). Proceedings of the California Riparian Systems Conference: Protection, Management, and Restoration for the 1990s, 22-24 September 1988, Davis California. Gen Techn Rep PSW-110 Pacific Southwest Forest and Sange Experiment Station, Berkeley, California; pages 222-225.

Ritter, J. 2000. Valley of plenty fights to survive the irrigated marvel that is the world's richest farmland is losing ground to economics and urban sprawl. USA Today. March 2.

Roberts, W.G., J.G. Howe, and J. Major. 1977. A survey of riparian forest flora and fauna in California. Pages 3-19 *in* A. Sands (ed.), Riparian Forests in California: Their Ecology and Conservation. Inst. Ecol. Publ. No. 15, University of California, Davis.

Wylie, G. 1999. Giant Garter Snake Project: 1998 Progress Report. Unpublished report. Dixon Field Station, Biological Resources Division, U.S. Geological Survey, Dixon California.

_____ 2003. Results of the 2003 Monitoring for Giant Garter Snakes (*Thamnophis gigas*): Bank protection project on the left bank of the Colusa Basin Drainage Canal in Reclamation District 108, Sacramento River Bank Protection Project, Phase II. Dixon Field Station, Biological Resources Division, U.S. Geological Survey, Dixon, California. 13 pages.

Wylie, G.D., M. Cassaza, and N.M. Carpenter. 2000a. Monitoring Giant Garter Snakes at the Colusa National Wildlife Refuge: 2000 Progress Report. Dixon Field Station, Biological Resources Division, U.S. Geological Survey, Dixon, California.

Wylie, G.D., M. Cassaza, and J.K. Daugherty. 1997. 1996 Progress Report for the Giant Garter Snake Study. Preliminary report. Dixon Field Station, Biological Resources Division, U.S. Geological Survey, Dixon, California.

Wylie, G.D., M. Cassaza, and L. Martin. 2003a. Giant Garter Snake Surveys in the Natomas Basin: 2000-2002. Dixon Field Station, Biological Resources Survey, U.S. Geological Survey, Dixon, California. 20 pages.

_____. 2004. Monitoring Giant Garter Snakes in the Natomas Basin: 2003 Results. USGS Biological Resources Division, Dixon Field Station, California.

Wylie, G.D., M. Cassaza, L. Martin, and E. Hansen. 2000b. Investigations of the Giant Garter Snakes in the Natomas Basin: 2000 Field Season. Unpublished report. Dixon Field Station, Biological Resources Division, U.S. Geological Survey, Dixon, California.

Wylie, G.D. and L.L. Martin. 2003b. Surveys for Giant Garter Snakes on USFWS Partners for Fish and Wildlife Project Sites: 2003 Progress Report. USGS Biological Resources Division, Dixon Field Station, California.

Zedler, P. H. 1987. The ecology of Southern California vernal pools. San Diego, California, U.S. Fish and Wildlife Service. 136 pages.

PERSONAL COMMUNICATIONS

Gifford, D. 2004. California Department of Fish and Game. January 8. Email to Laura Valoppi, U.S. Fish and Wildlife Service, Sacramento, California, Subject: interim strat.

King, J. 1995. Section of Evolution & Ecology, University of California, Davis.

Konde, L. 2003. California Department of Fish and Game. July 23.

Radmacher, R. 2004. Sacramento County. January 9. Email to Dan Gifford of California Department of Fish and Game. Subject: Build-out in Sacramento County.

Roessler, A. 2004. U.S. Fish and Wildlife Service, Sacramento, California. January 8.

STATE OF CALIFORNIA – THE RESOURCES AGENCY

ARNOLD SCHWARZENEGGER, *Governor*

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July 21, 2004

Reply To: FHWA040629C

Japtej Gill, Chief
North Region Environmental Branch
Caltrans
22389 Gateway Oaks Drive
Sacramento, CA 95833

Re: Determinations of Eligibility for the Proposed Extension of Consumnes River Boulevard West from its Current Terminus at Franklin Boulevard to Freeport Boulevard, Sacramento County, CA

Dear Mr. Gill:

Thank you for consulting with me about the subject undertaking in accordance with the *Programmatic Agreement Among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act, as it Pertains to the Administration of the Federal-Aid Highway Program in California* (PA).

The California Department of Transportation (Caltrans) is requesting my concurrence pursuant to Stipulation VIII.C.5 of the PA, that the following properties are not eligible for the National Register of Historic Places (NRHP):

- 7979-7981 Freeport Boulevard
- 7985 Freeport Boulevard
- 8013 Freeport Boulevard
- segment of the Western Pacific Railroad that crosses the APE

I concur.

Thank you for considering historic properties during project planning. If you have any questions, please call Natalie Lindquist at (916) 654-0631 and e-mail at nlind@ohp.parks.ca.gov.

Sincerely,

Milford Wayne Donaldson, FAIA
State Historic Preservation Officer